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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No.	
First Inventor or Application Identifier	Schneider
Title	Method and apparatus for integrating resolution services
Express Mail Label No.	EK094495395US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents

- ☒ * Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
- ☒ Specification [Total Pages **48**]
(preferred arrangement set forth below)
 - Descriptive title of the Invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
- ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets **29**]
- Oath or Declaration [Total Pages **77**]
 - ☒ Newly executed (original or copy)
 - ☐ Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 16 completed)
 - ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).

* NOTE FOR ITEMS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

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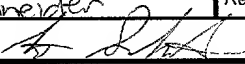
ACCOMPANYING APPLICATION PARTS

- ☐ Assignment Papers (cover sheet & document(s))
- ☐ 37 C.F.R. § 3.73(b) Statement ☐ Power of Attorney
(when there is an assignee)
- ☐ English Translation Document (if applicable)
- ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
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**STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(b))--INDEPENDENT INVENTOR**

Docket Number (Optional)

Applicant, Patentee, or Identifier: Schneider

Application or Patent No.: _____

Filed or Issued: Herewith

Title: Method and Apparatus for integrating resolution services, registration services and search services

As a below named inventor, I hereby state that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

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☐ the application identified above.
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Eric Schneider
NAME OF INVENTOR

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NAME OF INVENTOR

[Signature]
Signature of inventor

Signature of inventor

Signature of inventor

6/21/2000
Date

Date

Date

In re application of Method and apparatus for integrating
resolution services, registration services, and search services
Eric Schneider

CERTIFICATE OF EXPRESS MAILING

Express Mailing Number: EK094495395US

Date of Deposit: June 21, 2000



I hereby certify that the Application for Letters Patent of
Eric Schneider for the invention of "Method and apparatus for
integrating resolution services, registration services, and
search services", together with the appropriate filing fee is
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Sincerely,

A handwritten signature in black ink, appearing to be "Eric Schneider".

Eric Schneider

**METHOD AND APPARATUS FOR INTEGRATING RESOLUTION SERVICES,
REGISTRATION SERVICES, AND SEARCH SERVICES**

5

Other Applications

This application claims priority to U.S. Provisional Application Ser. No.
60/157,075 filed October 1, 1999, by Schneider, entitled "Method and apparatus
for integrating resource location and registration services of valid and fictitious
10 domain names", U.S. Provisional Application Ser. No. 60/160,125 filed October
18, 1999, by Schneider, entitled "Method and system for integrating resource
location, search services, and registration services", U.S. Patent Application Ser.
No. 09/525,350 filed March 15, 2000, by Schneider, entitled "Method for
integrating domain name registration with domain name resolution, U.S. Patent
15 Application Ser. No. 09/532,500 filed March 21, 2000, by Schneider, entitled
"Fictitious domain name method, product, and apparatus.", and PCT Application
No. 00/10883 filed April 20, 2000, by Schneider, entitled "Method for integrating
domain name registration with domain name resolution." which are herein
incorporated by reference.

20

Field of the Invention

This invention generally relates to information services, and more specifically
relates to a method and apparatus for integrating resolution services, registration
services, and search services.

25

Background of the Invention

The Internet is a vast computer network consisting of many smaller networks that
span the world. A network provides a distributed communicating system of
computers that are interconnected by various electronic communication links and
30 computer software protocols. Because of the Internet's distributed and open
network architecture, it is possible to transfer data from one computer to any

other computer worldwide. In 1991, the World-Wide-Web (WWW or Web) revolutionized the way information is managed and distributed.

The Web is based on the concept of hypertext and a transfer method known as Hypertext Transfer Protocol (HTTP) which is designed to run primarily over a Transmission Control Protocol/Internet Protocol (TCP/IP) connection that employs a standard Internet setup. A server computer may issue the data and a client computer displays or processes it. TCP may then convert messages into streams of packets at the source, then reassemble them back into messages at the destination. Internet Protocol (IP) handles addressing, seeing to it that packets are routed across multiple nodes and even across multiple networks with multiple standards. HTTP protocol permits client systems connected to the Internet to access independent and geographically scattered server systems also connected to the Internet.

Client side browsers, such as Netscape Navigator and/or Microsoft Internet Explorer (MSIE) provide a graphical user interface (GUI) based client applications that implement the client side portion of the HTTP protocol. One format for information transfer is to create documents using Hypertext Markup Language (HTML). HTML pages are made up of standard text as well as formatting codes that indicate how the page should be displayed. The client side browser reads these codes in order to display the page. A web page may be static and requires no variables to display information or link to other predetermined web pages. A web page is dynamic when arguments are passed which are either hidden in the web page or entered from a client browser to supply the necessary inputs displayed on the web page. Common Gateway Interface (CGI) is a standard for running external programs from a web server. CGI specifies how to pass arguments to the executing program as part of the HTTP server request. Commonly, a CGI script may take the name and value arguments from an input form of a first web page which is be used as a query to access a database server and generate an HTML web page with *customized*

data results as output that is passed back to the client browser for display.

The Web is a means of accessing information on the Internet that allows a user to "surf the web" and navigate the Internet resources intuitively, without technical knowledge. The Web dispenses with command-line utilities, which typically require a user to transmit sets of commands to communicate with an Internet server. Instead, the Web is made up of millions of interconnected web pages, or documents, which may be displayed on a computer monitor. The Web pages are provided by hosts running special servers. Software that runs these Web servers is relatively simple and is available on a wide range of computer platforms including PC's. Equally available is a form of client software, known as a Web browser, which is used to display Web pages as well as traditional non-Web files on the client system.

A network resource identifier such as a Uniform Resource Identifier (URI) is a compact string of characters for identifying an abstract or physical resource. URIs are the generic set of all names and addresses that refer to objects on the Internet. URIs that refer to objects accessed with existing protocols are known as Uniform Resource Locators (URLs). A URL is the address of a file accessible on the Internet. The URL contains the name of the protocol required to access the resource, a domain name, or IP address that identifies a specific computer on the Internet, and a hierarchical description of a file location on the computer. For example the URL "http://www.example.com/index.html", where "http" is the scheme or protocol, "www.example.com" is the Fully Qualified Domain Name (FQDN), and "index.html" is the filename located on the server.

Because an Internet address is a relatively long string of numbers (e.g., 31.41.59.26) that is difficult to remember, Internet users rely on domain names, memorable and sometimes catchy words corresponding to these numbers, in order to use electronic mail (e-mail) and to connect to Internet sites on the Web. The Domain Name System (DNS) is a set of protocols and services on a network

that allows users to utilize domain names when looking for other hosts (e.g., computers) on the network. The DNS is composed of a distributed database of names. The names in the DNS database establish a logical tree structure called the domain name space. Each node or domain in the domain name space is
 5 named and may contain subdomains. Domains and subdomains are grouped into zones to allow for distributed administration of the name space.

The DNS provides a mechanism so backup databases may be identified in case the first one becomes unavailable. DNS databases are updated automatically so
 10 that information on one name server does not remain out-of-date for long. A client of the DNS is called a resolver; resolvers are typically located in the application layer of the networking software of each TCP/IP capable machine. Users typically do not interact directly with the resolver. Resolvers query the DNS by directing queries at name servers, which contain parts of the distributed
 15 database that is accessed by using the DNS protocols to translate domain names into IP addresses needed for transmission of information across the network.

A domain name consists of two parts: a host and a domain. Technically, the
 20 letters to the right of the "dot" (e.g., tut.net) are referred to as Top Level Domains (TLDs), while hosts, computers with assigned IP addresses that are listed in specific TLD registries are known as second-level domains (SLDs). For the domain name "tut.net", ".net" is the TLD, and "tut" is the SLD. Domain name space is the ordered hierarchical set of all possible domain names either in use
 25 or to be used for locating an IP address on the Internet. TLDs are known as top-level domains because they comprise the highest-order name space available on the Internet. Second-level domains, as well as third-level domains (3LDs) such as "king.tut.net", are subsidiary to TLDs in the hierarchy of the Internet's DNS.

30 There are two types of top-level domains, generic and country code. Generic top-level domains (gTLDs) were created to allocate resources to the growing

community of institutional networks, while country code top-level domains (ccTLDs) were created for use by each individual country, as deemed necessary. More than 240 national, or country-code TLDs (e.g., United States (.us), Japan (.jp), Germany (.de), etc.) are administered by their corresponding governments, or by private entities with the appropriate national government's acquiescence. A small set of gTLDs does not carry any national identifier, but denote the intended function of that portion of the domain space. For example, ".com" was established for commercial networks, ".org" for not-for-profit organizations, and ".net" for network gateways. The set of gTLDs was established early in the history of the DNS and has not been changed or augmented in recent years (COM, ORG, GOV, and MIL were created by January 1985, NET in July 1985, and INT was added in November 1988).

A growing set of tools and services have enabled users to choose many techniques suited for improved navigation and access to content on a network such as the Internet. Different services are used to access desired content. There are resolution services for the DNS which receives a domain name (e.g., "example.com) from a client for translation into an IP address to access the resources of a specific network addressable device (e.g., web server) on a network such as the Internet. The function of translating a domain name into a corresponding IP address is known as name resolution. Name resolution is performed by a distributed system of name servers that run specialized software known as resolvers to fulfill the resource location request of the client by the successive hierarchical querying of the resource records from zone files.

There are registration services such as the registration of domain names. Domain name registration for a given Network Information Center (NIC) authority may be accessed by a TCP/IP application called WHOIS, which queries a NIC database to find the name of network and system administrators, system and network points-of-contact, and other individuals who are registered in appropriate databases. Domain names are identifiers used for accessing resources and

and get fast access to web sites using the browser's location field. Any single or multiword strings typed into the browser's location field that does not include a "." are sent via HTTP to a server at "netscape.com". The keyword server pulls the string and compares it to several separate lists of keyword-URL pairs. If the keyword system finds a match, it redirects the user's browser to the URL of the keyword-URL pair. Failing a match against the lists, the user's browser is redirected to a Netscape Search page with the typed string as the search query. The "." versus " " is a key factor in determining what services are used. The detection of a "." implies a domain name whereas the detection of a " " implies a search request.

The autosearch feature of Microsoft Internet Explorer (MSIE) is another example of an improvement to the location field of a web browser. The details of the autosearch feature is disclosed in U.S. Patent 6,009,459 issued on December 28, 1999 by Belfiore, et al., entitled, "Intelligent automatic searching for resources in a distributed environment." The '459 patent specifies a mechanism for a computer system to automatically and intelligently determine what a user intended when the user entered text within the location field of a web browser. Often users improperly enter URLs or enter search terms in a user interface element that requires URLs. If the user enters text that is not a URL, the system may first try to construct a valid URL from the user-entered text. If a valid URL can not be constructed, the browser then automatically formats a search engine query using the user-entered text and forwards the query to an Internet search engine.

In addition, the '459 patent specifies a template registry that categorizes the specific suitability of a plurality of search engines to locate web sites related to a determined meaning of the specified text. The template is an entry in the registry that includes replaceable characters that may be replaced with the processed text. An example template registry entry that causes the Yahoo! search engine

to be called is "http://msie.yahoo.com/autosearch?%s". The %s is filled in with information regarding the search terms.

Furthermore, the '459 patent specifies a method which provides for automatically deleting prefix terms from input that are identified as not necessary to perform a search based on the determined meaning of the entered input. Directive terms such as "go" or "find" followed by search terms may be entered within the location field. Such users intend for the web browser to locate web pages that are identified by terms within the text. As the directive terms do not contain content that is useful in conducting a search, these prefix terms are dropped from the text. Though prefixes may help process keywords in a more specific way, there are no such prefixes in use for specifying how domain names may be processed through a user interface element used for search requests, resolution requests, and registration requests. For example, search engine web sites have specified a list of prefixes to assist in performing a more specific search request. Any such prefixes have no relevance to domain names [e.g., valid domain names (VDNs) and fictitious domain names (FDNs)] but to that of keywords and phrases.

There have been advances with respect to submitting keyword search requests to search engines. RealNames and other companies like Network use plain language as a means for resource location and have developed their own version of resolution services. Using simplified network addresses in the form of keywords/phrases as opposed to the conventional form of URLs in the DNS, offers the possibility to further contemplate the differences between search requests and resource location. Though an observable fact, little if any has been done to provide integration tools to support these differences. To date, the only advancement demonstrated are the partnerships made with RealNames and different portal web sites. When a search request is performed, input may be forwarded to a RealNames server concurrent with the original search request and if there are any matches, the first result displayed may be a *registered*

RealName which links to a registered web site followed by displaying the search results from the search request.

Though RealNames demonstrates using keywords and phrases from a search request for resource location, there are no methods for detecting a domain name or URL as input from a search request. In effect, a domain name is processed as a literal string or keyword. For example, when a popular web site such as "news.com" is processed from input there is a high probability that the URL "http://news.com" would be displayed within the top few search results. There are no systems that provide such a URL as a first result. However, when a domain name is reserved and has no web site or the domain name corresponds to a web site with little traffic (e.g., web pages having no META tags, etc.), there are no search results, and in turn, no hyperlinks are displayed. This observation is apparent upon surveying the search results of hundreds of search engines, which clearly indicate that a domain name is processed as a literal string only without consideration for processing input in any way aside from that of a search request. There have been some improvements by providing links to other vendors such as processing the search request and responding with a link for a book search at "amazon.com" or the like, but there are no such links that provide vendor domain name related services or online identity services in response to a search request.

Fig. 1a depicts a typical output from a search portal web site for the input "zipnames.com". Results are returned to output such as "found no document matching your query", and generates hyperlinks that use the input as a search request from another URL. Such links may redirect to shopping sites and reference sites or to other search engines. Figs. 1b and 1c depict output from a metasearch site for the input "zipnames.com". Again, the output depicts links that are generated for searching input at another web address. It is clear from these results that no provisions have been made to detect the presence of a domain name before processing a search request.

5 No search engines or existing services make use of the "." delimiter to extend
searching into the realm of processing resolution and/or registration services.
Any results that are returned from a search request are based on finding a
database match to the domain name as a keyword or literal string. Currently,
there are no search engines or resources that generate a link for WHOIS results
10 in response to receiving a network address such as a domain name, FQDN, or
URL and may be listed or redirected as part of search results.

To date, search services, resolution services, and registration services have remained as separate services. New utility may be demonstrated by combining these separate services into a unified service. Accordingly, in light of the above, there is a strong need in the art for a system and method for integrating resolution services, search services, and registration services.

Summary of the Invention

20 The present invention enables the seamless integration between resource location, search, and registration services. The invention enables a search request to be processed as a literal string, network address, or both. The present invention generates and displays at least one hyperlink at the top of standard search results where the link may access a URI or NIC registration of
25 an available domain name in the form of "keyword.TLD".

The invention enables a plurality of identifiers to be processed as input and displayed as a resolution request. The present invention enables the integration of metalinks as part of search results and registration results. The invention enables the use of identifier prefixes as a command language. The present invention enables a user to edit, list, obtain the status and history, *select*, *renew*,

transfer, escrow, auction, bid, valuate, purchase, sell, lease, redirect, lock, web host, incorporate, trademark, locate, and dial a domain name.

The present invention enables more specific error messages to be generated in response to an input request. The invention enables search results to be integrated a part of the results from a registration request. The present invention enables the integration of metalinks (e.g., maps, after market domain name information, etc.) as part of results from a WHOIS request. The invention enables distributed WHOIS caching to minimize network connection bandwidth.

The present invention enables the real-time display of registrant information that corresponds to a current URI. The invention enables automatic notification of any identifiers that may soon be available in response to accessing such an identifier.

In general, in accordance with the present invention, a method for processing a search request includes the steps of determining that the received search request includes an identifier having a valid domain name, determining whether the valid domain name is resolvable, resolving the identifier in response to determining that the valid domain name is resolvable, and processing a registration request in response to determining that the valid domain name is not resolvable.

In accordance with other aspects of the present invention, a method for processing a search request includes the steps of determining that the search request includes an identifier having a valid domain name, determining whether the valid domain name is available for registration, providing a registration form when the domain name is determined available for registration, and providing registrant information when the domain name is determined not available for registration.

In accordance with yet other aspects of the present invention, a method for processing a search request includes the steps of determining that the search request includes at least one keyword, generating at least one domain name from the at least one keyword, generating at least one URI for each domain
5 name generated, processing the search request, and determining whether to provide any generated URIs while providing any search results from the processed search request.

In accordance with still other aspects of the present invention, a method for
10 processing a search request includes the steps of determining that the search request includes an identifier having a valid domain name, generating at least one URI from the valid domain name, processing the search request, and determining whether to provide any generated URIs while providing any search results from the processed search request.

15 In accordance with yet additional aspects of the present invention, a system which implements substantially the same functionality in substantially the same manner as the methods described above is provided.

20 In accordance with other additional aspects of the present invention, a computer-readable medium that includes computer-executable instructions may be used to perform substantially the same methods as those described above is provided.

The foregoing and other features of the invention are hereinafter fully described
25 and particularly pointed out in the claims. The following description and the annexed drawings set forth in detail one or more illustrative aspects of the invention, such being indicative, however, of but one or a few of the various ways in which the principles of the invention may be employed.

Brief Description of the Drawings

Fig. 1a illustrates an exemplary prior art web page after search results have been returned in response to a domain name being entered into a search text box.

5

Fig. 1b illustrates an exemplary prior art top portion of a web page after search results have been returned from many search engines in response to a domain name being entered into a search text box.

10 Fig. 1c illustrates the bottom portion of the web page depicted in Fig. 1b.

Fig. 1d is a block diagram of an exemplary distributed computer system in accordance with the present invention.

15 Fig. 1e is a diagram depicting the location field or web page search request used in a conventional web browser.

Fig. 1f is a block diagram illustrating exemplary information records stored in memory in accordance with the present invention.

20

Fig. 2a is a flowchart illustrating the steps performed by a prior art system for providing search results.

25 Fig. 2b is a flowchart illustrating the steps performed by a prior art system for providing search results including a hyperlink for any registered keyword or phrase.

Fig. 2c is a flowchart illustrating the steps performed for determining how to process received input in accordance with the present invention.

30

Fig. 3a is a flowchart illustrating the steps performed for processing a resolution or registration request from a search request having a valid domain name in accordance with the present invention.

- 5 Fig. 3b is a flowchart illustrating the steps performed for integrating metalinks as part of search results in accordance with the present invention.

- Fig. 3c is a flowchart illustrating the steps performed for processing a resolution or registration request from a search request having a fictitious domain name in accordance with the present invention.
- 10

Fig. 3d is a flowchart illustrating the steps performed for integrating search results with available domain names that correspond to a given search request in accordance with the present invention.

- 15 Fig. 4a is a flowchart illustrating the steps performed for processing a renewal request in response to detecting a "renew" domain name prefix from an input request in accordance with the present invention.

- 20 Fig. 4b is a flowchart illustrating the steps performed for processing a registration request in response to detecting a "register" domain name prefix from an input request in accordance with the present invention.

- Fig. 4c is a flowchart illustrating the steps performed for processing a transfer request in response to detecting a "transfer" domain name prefix from an input request in accordance with the present invention.
- 25

- Fig. 4d is a flowchart illustrating the steps performed for processing a purchase request in response to detecting a "buy" domain name prefix from an input request in accordance with the present invention.
- 30

Fig. 4e is a flowchart illustrating the steps performed for processing a sale request in response to detecting a "sell" domain name prefix from an input request in accordance with the present invention.

- 5 Fig. 5a is a diagram depicting an exemplary configuration settings interface in accordance with the present invention for selecting how an input request may be processed.

10 Fig. 5b illustrates a web page having a request form and resulting content from the use of such a request form in accordance with the present invention.

Fig. 6a illustrates the prior art for the typical output of a search request.

15 Fig. 6b illustrates modifications to the output of the search request that extends the functionality of the search results in accordance with the present invention.

Fig. 6c illustrates the page source of the output discussed in Fig. 6b in accordance with the present invention.

20 Fig. 7a is a flowchart illustrating the steps performed by a prior art system for registering a domain name.

25 Fig. 7b is a top level flowchart illustrating the step performed of providing an error message in response to the determination that a domain name can not be generated or parsed in accordance with the present invention.

Fig. 7c is a flowchart illustrating the steps performed for providing search services in response to registration services in accordance with the present invention.

30

Fig. 7d is a flowchart illustrating the steps performed for integrating search results with registration results in accordance with the present invention.

Fig. 7e is a flowchart illustrating the steps performed for extending functionality of WHOIS results in accordance with the present invention.

Fig. 7f illustrates the prior art of a typical WHOIS output for a domain name.

Fig. 7g illustrates the page source of modified WHOIS output to extend functionality in accordance with the present invention.

Fig. 8 is a flowchart of the steps performed for extending the functionality of an input request in accordance with the present invention.

Fig. 9a is an illustration of how results may be displayed in a web browser in accordance with the present invention.

Fig. 9b is a flowchart illustrating a methodology for notifying a client that a domain name is available or may soon be available for registration in accordance with the present invention.

Detailed Description of the Invention

The present invention will now be described with reference to the drawings, wherein like reference numerals are used to refer to like elements throughout.

Turning first to the nomenclature of the specification, the detailed description that follows represents processes and symbolic representations of operations by conventional computer components, including a local processing unit, memory storage devices for the local processing unit, display devices, and input devices.

Furthermore, these processes and operations may utilize conventional computer components in a heterogeneous distributed computing environment, including

remote file servers, computer servers, and memory storage devices. These distributed computing components may be accessible to the local processing unit by a communication network.

5 The processes and operations performed by the computer include the manipulation of data bits by a local processing unit and/or remote server and the maintenance of these bits within data structures resident in one or more of the local or remote memory storage devices. These data structures impose a physical organization upon the collection of data bits stored within a memory
10 storage device and represent electromagnetic spectrum elements.

A process may generally be defined as being a sequence of computer-executed steps leading to a desired result. These steps generally require physical manipulations of physical quantities. Usually, though not necessarily, these
15 quantities may take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, compared, or otherwise manipulated. It is conventional for those skilled in the art to refer to these signals as bits or bytes (when they have binary logic levels), pixel values, words, values, elements, symbols, characters, terms, numbers, points, records, objects, images, files,
20 directories, subdirectories, or the like. It should be kept in mind, however, that these and similar terms should be associated with appropriate physical quantities for computer operations, and that these terms are merely conventional labels applied to physical quantities that exist within and during operation of the computer.

25 It should also be understood that manipulations within the computer are often referred to in terms such as adding, comparing, moving, positioning, placing, illuminating, removing, altering, etc., which are often associated with manual operations performed by a human operator. The operations described herein
30 are machine operations performed in conjunction with various input provided by a human operator or user that interacts with the computer. The machines used

for performing the operation of the present invention include local or remote general-purpose digital computers or other similar computing devices.

In addition, it should be understood that the programs, processes, methods, etc. described herein are not related or limited to any particular computer or apparatus nor are they related or limited to any particular communication network architecture. Rather, various types of general-purpose machines may be used with program modules constructed in accordance with the teachings described herein. Similarly, it may prove advantageous to construct a specialized apparatus to perform the method steps described herein by way of dedicated computer systems in a specific network architecture with hard-wired logic or programs stored in nonvolatile memory, such as read only memory.

Fig. 1d illustrates an exemplary system for providing a distributed computer system 100 in accordance with one aspect of the present invention and may include client computers or any network access apparatus 110 connected to server computers 120 via a network 130. The network 130 may use Internet communications protocols (IP) to allow clients 110 to communicate with servers 120. The network access apparatus 110 may include a modem or like transceiver to communicate with the electronic network 130. The modem may communicate with the electronic network 130 via a line 116 such as a telephone line, an ISDN line, a coaxial line, a cable television line, a fiber optic line, or a computer network line. Alternatively, the modem may wirelessly communicate with the electronic network 130. The electronic network 130 may provide an on-line service, an Internet service provider, a local area network service, a wide area network service, a cable television service, a wireless data service, an intranet, a satellite service, or the like.

The client computers 110 may be any network access apparatus including hand held devices, palmtop computers, personal digital assistants (PDAs), notebook, laptop, portable computers, desktop PCs, workstations, and/or larger/smaller

in multiple processor environments wherein the client computer includes multiple processors. Moreover, the client computer need not include all of the input/output devices as discussed above and may also include additional input/output devices. Those skilled in the art will appreciate that the present invention may also be practiced via Intranets and more generally in distributed environments in which a client computer requests resources from a server computer.

During operation of the distributed system 100, users of the clients 110 may desire to access information records 122 stored by the servers 120 while utilizing, for example, the Web. Furthermore, such server systems 120 may also include one or more search engines having one or more databases 124. The records of information 122 may be in the form of Web pages 150. The pages 150 may be data records including as content plain textual information, or more complex digitally encoded multimedia content, such as software programs, graphics, audio signals, videos, and so forth. It should be understood that although this description focuses on locating information on the World-Wide-Web, the system may also be used for locating information via other wide or local area networks (WANs and LANs), or information stored in a single computer using other communications protocols.

The clients 110 may execute Web browser programs 112, such as Netscape Navigator or MSIE to locate the pages or records 150. The browser programs 112 enable users to enter addresses of specific Web pages 150 to be retrieved. Typically, the address of a Web page is specified as a URI or more specifically as a URL. In addition, when a page has been retrieved, the browser programs 112 may provide access to other pages or records by "clicking" on hyperlinks (or links) to previously retrieved Web pages. Such links may provide an automated way to enter the URL of another page, and to retrieve that page.

the retrieved identifiers may represent network resources in the form of URLs or hyperlinks. Results, if any, are then notified, accessed, and/or displayed in step 220.

Fig. 2b is a toplevel flowchart illustrating the steps of an exemplary prior art system for combining search results of a search request and any portion of the search request having a registered phrase or keyword. A network access apparatus 110, servlet, applet, stand-alone executable program, command line of a device such as a phone browser, or user interface element such as a text box object or location field 154 of a web browser 112, receives and parses in step 210 input such as text or voice. A combine flag is then cleared in step 225. A determination may be made in step 230 by consulting a keyword/phrase registry 176 as to whether the search request includes a registered phrase or keyword, and if not, then search results are retrieved in step 215. Since the combine flag is determined in step 235 to not be set, then results if any, are provided in step 220.

However when it is determined in step 230 that the search request does include a registered phrase or keyword, then at least one URI may be retrieved in step 240 that corresponds to the registered keyword or phrase. A determination may be made in step 245 as to whether to redirect results to the retrieved URI. If so, then the page source of the URI is accessed in step 250 and results, if any, may then be notified, accessed, and/or displayed in step 220. However when it is determined in step 245 that results are not redirected to the URI then the combine flag is set in step 255 and search results may be retrieved in step 215. Since the combine flag is determined in step 235 to be set, the hyperlink of the retrieved URI is combined in step 260 with search results, and such results if any, may then be notified, accessed, and/or displayed in step 220.

Fig. 2c is a flowchart showing steps in accordance with the present invention for determining how to process received input 210. After input is received *and/or*

When the request is determined in step 310 to include a valid domain name, it may then be determined in step 315 whether to perform a search request with the input as a literal string. Search results may be retrieved in step 215. A search request may be initiated by selecting an exact phrase option from a
 5 listbox or by surrounding the input with a delimiter such as the quote sign (e.g., "example.com") to process the detected domain name as a literal string, otherwise a domain name detected from input may be processed as a registration and/or resolution request. When it is determined that the input is instead processed in step 315 as a resolution and/or registration request, then
 10 the resolvability and/or availability of the domain name may be determined in step 320. When the domain name is determined in step 320 to be not resolvable, then the domain name is processed in step 325 as a registration request. Domain name resolution is explained in P. Mockapetris, "Informational RFC (Request for Comment) 1035: Domain Names - Implementation and
 15 Specification", Internet Engineering Task Force (IETF), November 1987, "http://www.faqs.org/rfcs/rfc1035.html", which is herein incorporated by reference.

A WHOIS request is performed to determine domain name availability. When a
 20 domain name is already registered (e.g., determined not available), registrant information may be provided to the client system. However, when the domain name is available, a registration form may be processed and submitted to a registrar and/or registry and to it's partners and/or affiliates. Specification of the WHOIS protocol is provided in K. Harrenstien, M. Stahl, and E. Feinler,
 25 "Informational RFC (Request for Comment) 954: NICNAME/WHOIS", Internet Engineering Task Force (IETF), October 1985, "http://www.faqs.org/rfcs/rfc954.html", which is herein incorporated by reference.

When it is determined in step 320 that the domain name is resolvable and further
 30 determined in step 330 that the search request includes a valid URI then the page source of the URI may be accessed in step 250 and results, if any, may

then be notified, accessed, and/or displayed in step 220. When the search request does not include a valid URI as determined in step 330, then a valid URI may be generated in step 335 and the page source of the URI may then be accessed in step 250.

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Fig. 3b illustrates how search results may be enhanced by providing links to URIs of meta-information generated from domain names in accordance with the present invention. When it is determined in step 315 that a valid domain name is to be processed as a search request, the determination of whether to integrate links of meta-information or "metalinks" may be determined in step 340. When metalinks are to be integrated then at least one metalink may be generated in step 345 and included with any search results (step 215) where such metalinks may access any permutation of the following; URI of the domain name, WHOIS of the domain name, page source of the URI, HEAD request of URI, sitemap of URI, and domain name status or the like. Domain name status may indicate whether the domain name is available for sale, license, or lease by the registrant or through an auction and/or listing service. If metalinks are not integrated, then search results may be retrieved in step 215. Templates 186 may be used to generate metalinks.

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In a hierarchical naming system such as the DNS, a first domain may represent the highest level domain (HLD). A HLD that is determined not resolvable is referred to as a Top Level Domain Alias (TLDA) whereas a resolvable HLD is referred to as a Top Level Domain (TLD). Any domain name that is not valid or any domain name having a TLDA is called a fictitious domain name (FDN). More information on FDNs may be found in co-pending patent applications (60/125,531; 60/135,751; 60/143,859; 09/532,500).

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Fig. 3c illustrates how FDNs may be integrated with search services in accordance with the present invention. When it is determined in step 230 that the search request does not include a registered phrase or keyword, then it may

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the search request is a single keyword then at least one hyperlink is generated in step 385 and displayed at the top of search results (step 215) where additional links/metalinks may access the URI, WHOIS, and/or NIC registration of an available domain name in the form of "keyword.TLD". For example, "cars" is an entered keyword and returns metalinks of "cars.com", "cars.net", or the like in addition to search results on the keyword "cars".

When a search request has more than one keyword then at least one hyperlink may be generated in step 390 and displayed at the top of search results (step 215). A link/metalink may access the URI, WHOIS, and/or NIC registration of available domain name in the form of "combinedkeywords.TLD" (e.g., "best price" yields "bestprice.com" and "pricebest.com", etc.). The availability of such generated domain names may be determined in real-time by performing a plurality of WHOIS requests. Links may be displayed for all domain names determined available for registration. Additional domain names may be generated and/or determined available by adding word variations to a domain name (e.g., the word "now" yields "nowbestprice.com", "bestpricenow.com").

A domain name may be considered an object having many properties or attributes, methods, and events. For instance, a domain name may be bought, sold, leased, escrowed, transferred, edited, auctioned, listed, locked, trademarked, dialed, e-mailed, registered, and resolved or the like. A domain name may be considered a global network identifier. All such attributes may be used as prefixes for determining how a domain name is processed during any kind of request (e.g., resolution, search, and/or registration request). For instance, a prefix and domain name may be entered into a search text box, directly from the location field of a web browser, or received as text from a speech to text decoder.

Similar to how the MSIE Autosearch feature processes search request prefixes as specified in the '459 patent, more prefixes may be defined to satisfy requests

other than that of search requests. A template 186 may be defined for each domain name prefix and used for generating a corresponding URL to perform a specific request, function, or result. For instance, the command "transfer example.com" or "transfer example.com from RegistrarA to RegistrarB" may be entered. The prefix "transfer" is detected and a search engine script or the MSIE Autosearch feature will insert the domain name "example.com" into a template to generate a URL which is used to redirect the client to registrar services for the specific purpose of transferring "example.com" from a current registrar to a newly selected registrar. Figs. 4a through 4e illustrate steps performed for some commonly used prefixes. However, similar steps may be applied by those skilled in the art for any prefix and/or suffix that may perform an operative function for numerous types of identifiers (e.g., domain name, telephone number, IP address, ISBN, UPC, SKU, Driver's License, Trademark Number, Patent Number, Social Security Number, keyword, FDNs, screen name, username, alias, handle, phrase, slogan, etc.). Other domain name prefixes are shown in more detail in Fig. 5b.

Fig. 4a illustrates how a "renew" prefix may be used as part of a search request to initiate registration services in accordance with the present invention. After a search request is received and parsed in step 210, it is then determined in step 410 whether the prefix "renew" was parsed. If not, then it may be determined in step 230 as to whether the search request includes a registered phrase or keyword. When it is determined in step 410 that the prefix "renew" was parsed, it is then determined in step 412 how the prefix request is processed. First, it may be determined in step 415 whether the request includes a registered phrase or keyword. If so, then the registered phrase or keyword is redirected in step 420 to a registrar for the purposes of processing in step 450 a renewal registration request. When it is determined in step 415 that the request does not include a registered phrase or keyword, then it may be determined in step 425 whether the request includes a valid domain name. If so, then the valid domain name is redirected in step 430 to a registrar for the purposes of processing in

step 450 a renewal registration request. When it is determined in step 425 that the request does not include a valid domain name, then it may be determined in step 435 whether the request includes a FDN. If so, then the FDN is redirected in step 440 to a registrar for the purposes of processing in step 450 a renewal registration request. When it is determined in step 435 that the search request does not include a FDN, then search results may be retrieved in step 215.

Fig. 4b illustrates how a "register" prefix may be used as part of a search request to initiate registration services in accordance with the present invention. After it is determined in step 410 that the prefix "renew" was not parsed, it then may be determined in step 455 whether the prefix "register" was parsed. If not, then it may be determined in step 230 as to whether the search request includes a registered phrase or keyword. When it is determined in step 455 that the prefix "register" was parsed, it is then determined in step 412 how the prefix request is processed. If the parsed prefix does not result in processing a registration request in step 460 then search results may be retrieved in step 215.

Fig. 4c illustrates how a "transfer" prefix may be used as part of a search request to initiate transfer services in accordance with the present invention. After it is determined in step 455 that the prefix "register" was not parsed, it then may be determined in step 465 whether the prefix "transfer" was parsed. If not, then it may be determined in step 230 as to whether the search request includes a registered phrase or keyword. When it is determined in step 465 that the prefix "transfer" was parsed, it is then determined in step 412 how the prefix request is processed. If the parsed prefix does not result in processing a transfer request in step 470 then search results may be retrieved in step 215.

Fig. 4d illustrates how a "buy" prefix may be used as part of a search request to initiate purchasing services in accordance with the present invention. After it is determined in step 465 that the prefix "transfer" was not parsed, it then may be determined in step 475 whether the prefix "buy" was parsed. If not, then it may

be determined in step 230 as to whether the search request includes a registered phrase or keyword. When it is determined in step 475 that the prefix "buy" was parsed, it is then determined in step 412 how the prefix request is processed. If the parsed prefix does not result in processing a purchase request
5 in step 480 then search results may be retrieved in step 215.

Fig. 4e illustrates how a "sell" prefix may be used as part of a search request to initiate selling services in accordance with the present invention. After it is determined in step 475 that the prefix "buy" was not parsed, it then may be
10 determined in step 485 whether the prefix "sell" was parsed. If not, then it may be determined in step 230 as to whether the search request includes a registered phrase or keyword. When it is determined in step 485 that the prefix "sell" was parsed, it is then determined in step 412 how the prefix request is processed. If the parsed prefix does not result in processing a selling request in
15 step 490 then search results may be retrieved in step 215.

Fig. 5a illustrates user modifiable configuration settings 174, which may be accessed for determining how to process an input request. Configuration settings 174 may include general features 520, search features 530, and
20 registration features 540. General feature settings 520 may include a method for selecting redirection to a registrar and/or search engine. Such settings may further include the enabling of a watch list (see Fig. 9b), prefixes (e.g., registration commands), and/or the enabling of metalinks. Enhanced search features 530 may include combining search results with the generation of
25 domain names in response to a search request and/or providing a means for registering any input determined to be available (e.g., VDN, FDN, keyword or phrase). Enhanced registration features 540 may include combining registration results with the results of a search request from the input of a registration request and/or the ability to include resource location in response to a
30 registration request. Other configuration settings that are not shown may be applied by those skilled in the art to perform any aspect of the present invention.

Identifier prefixes may be used as a command language by entering such a prefix in conjunction with an identifier and/or other parameters into a user interface element such as a microphone with speech to text translation, a web browser location field 154, a web page search text box 162, or command line of a computing device, etc. Such prefixes may also be selected from a list of prefixes as a means for processing an identifier as input. A prefix database 182 may be used in conjunction with templates 186 to generate a URI that may be used for processing an operative function upon the identifier that corresponds to the selected prefix. The following are examples of how prefixes may be used for domain names.

"Edit example.com" may enable a registrant of the domain name "example.com" to edit contact information stored in the registrar database. "Handle example.com" may enable a user to list or edit any handles that may correspond to the domain name "example.com". "List example.com" may enable a user to display all records that may correspond to "example.com". "Status example.com" may enable a user to review the current status of "example.com". "History example.com" may enable a user to review the transaction history of "example.com". "Watch example.com" may enable a user to add "example.com" to a watch list for notifying the user as to similar domain names registered or to notify that "example.com" is available or may soon be available for registration. "Renew example.com" enables a registrant to extend the expiry date of "example.com" and provide the option of transferring from one registrar to another. "Transfer example.com RegistrarA to RegistrarB" may enable a registrant to transfer "example.com" from a current registrarA to a new registrarB. "Escrow example.com" may enable a registrant to hold "example.com" in escrow for the purposes of transferring the domain name. "Consolidate example.com" may enable a registrant to list all of the registered domain names of a registrant or given handle for the purpose of minimizing renewal payments across a portfolio of domain names.

"Auction example.com" may enable a registrant to list "example.com" for auction". "Bid example.com" may enable an entity to make a bid on "example.com". "Value domain name" may enable a user to receive an estimate of the book value or inventory value for "example.com". "Buy example.com" may enable an entity to make a solicitation for purchase or to purchase "example.com" from the current registrant. "Sell example.com" may enable a registrant to list "example.com" for sale. "Lease example.com" may enable an entity to make a solicitation for leasing or to lease "example.com" from the current registrant.

"Expire example.com" may enable a user to list the expiration date for

5 "example.com". "Registrar example.com" may enable a user to list which registrar "example.com" is registered with. "Tools example.com" may enable an entity to use online tools to find more information on "example.com" such as zone files, nameservers, subdomains, and the like. An example of such online tools may be accessed from a URL such as "http://domtools.com/domtools/".

10 "Redirect example.com" may enable a registrant to configure "example.com" to
redirect to another URL. "Lock example.com" may enable a registrant to assure
that "example.com" may not be transferred to another registrar until the
registrant unlocks the domain name.

15 "Email example.com" may enable a registrant to sign up for email services for "example.com". "Webhost example.com" may enable a registrant to sign up for web hosting services for "example.com". "Inc example.com" or "LLC example.com" may enable a registrant to submit articles or incorporation/organization and form a business entity for "example.com".

20 "Trademark example.com" may enable a registrant to file a trademark for
"example.com". "Geo example.com" may enable a user to receive GPS
coordinates from a GPS system or the current latitude/longitude for
"example.com". "Dial example.com" may enable a user to make a telephone call
to a phone number designated by the registrant of "example.com". For instance,
25 the URL "http://example.com/index.html" may launch a dialer program or redirect
to an Internet telephone protocol for contacting the registrant instead of or in
addition to accessing a web site. Domain names are generally used as
identifiers to access a web site or the like. There are no such domain names
used for the explicit purpose of dialing a telephone number instead of accessing
30 a web site. Specification of an Internet telephone protocol is provided in A.

Vaha-Sipila, "Informational RFC (Request for Comment) 2806: URLs for

Telephone Calls", Internet Engineering Task Force (IETF), April 2000, "http://www.faqs.org/rfcs/rfc2806.html", which is herein incorporated by reference.

- 5 Fig. 6a illustrates a typical output from the results of a search request. The search request used is the phrase "software patent". For illustrative purposes, only the first four search results are shown. The first line of a given result may be underlined indicating a hyperlink reference. The hyperlink accesses the URL displayed in the last line of each given search result.

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- Fig. 6b illustrates modifications made to the output of the search request to extend functionality of the search results. A second line of metalinks may be added to each search result enabling the user to retrieve meta-information about the URI such as WHOIS, Homepage, <META> tag Information, Page Source, Sitemap information, and after market domain name status. Steps (420, 430) for providing such added results are shown in Fig. 4. For instance, the URI for a sitemap may be determined from a variety of methods including access to a sitemap database 184, which may be compiled from a web site such as "sitemap.net" or maintained by having a "crawler" program interrogate the web site of the URI by searching for a sitemap link on the homepage or any other accessible web page or by finding a directory called "sitemap" or a filename called "sitemap.htm" (or ".html"). The after market domain name status may be determined in a similar manner to that of a sitemap. A domain name status database 198 may be maintained by having a "crawler" program interrogate a myriad of after market web sites that list and/or auction domain names.
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- 20
- 25

- Fig. 6c illustrates the page source of the output shown in Fig. 6b. By extracting the domain name from the URI, other URIs may be generated and displayed to yield meta-information based on the context of the original URI. Though direct links to meta-information are shown; such links may first access a central source and then URI redirection may be applied to track visits, IP addresses, previous
- 30

URIs, demographic information, etc. for the purposes such as accounting, marketing, advertising, and distribution.

When a domain name is received as input to a registration service, the
5 availability of the domain name is determined. If the domain name is not
available, registrant information is returned and the client is notified that the
domain name in question is not available and may provide the option of checking
the availability of other domain names. When a domain name is available, a
user may be presented with the choice of registering the domain name. Upon
10 completion of registration, another domain name may then be checked for
availability.

Fig. 7a illustrates such a registration service. A device such as a network access
apparatus 110, servlet, applet, stand-alone executable program, or a user
15 interface element such as a text box object, receives and parses input in step
704. It is then determined in step 706 whether a valid domain name may be
parsed or generated from input. When input can not be processed as a
registration request then an error message may be provided in step 708
otherwise a registration request may be processed in step 710 for each valid
20 domain name. To process such a request, availability of the domain name 306
may be determined in step 714. If the domain name 704 is determined to not be
available in step 314, then a record from a corresponding WHOIS database may
be retrieved and displayed in step 718. Because WHOIS requests are so heavily
relied on, methods for minimizing network bandwidth of these services are
25 considered preferable. For instance, a browser 112 may be configured to first
access a client WHOIS cache and/or a series of distributed WHOIS caches 188
to increase lookup performance. Such caches may be distributed in a manner
similar to the DNS wherein each WHOIS cache may make further hierarchical
reference to the next successive WHOIS cache until a definitive result has been
30 found.

When the domain name 704 is determined available in step 714, then such information may be displayed accordingly, prompting the client to register the domain name in step 722. When it is determined in step 722 that the client may wish to register the domain name 704, further information may be displayed to
5 assist the user in registering the domain name in step 726.

Fig. 7b is a top-level flowchart showing how an error message may be used in accordance with the present invention. When it is determined in step 706 that a valid domain name may not be parsed or generated from input, a more specific
10 error message is provided in step 730 that may include hyperlinks to determine whether input may be a registered identifier in another namespace or a link to process input as a search and/or resolution request. In addition, further options such as modifying configuration settings 174 may also be included as hyperlinks in such a resulting web page or error message.

15 Fig. 7c is a flowchart illustrating a methodology for performing a search request after a completed registration request. After the registration request is processed in step 710, it may be determined in step 740 by accessing configuration settings 174 whether a search request may be processed. More
20 specifically, it may be further determined in step 744 whether received input is to be processed as a search request in step 748. When this is the case, a search request is constructed from the identifier (e.g., domain name) and processed in step 748 and results if any may then be notified, accessed, and/or displayed in step 752.

25 Fig. 7d is a flowchart illustrating a methodology for combining the results of performing a search request while processing a registration request. When input is parsed and received in step 704 it is determined in step 760 whether search results may be combined with results from the registration request (step 710) by
30 accessing configuration settings 174. When this is the case, search results from input may be retrieved in step 764. If not, then it may be determined in step 768

whether input includes any keywords. If there are no keywords then it may be determined in step 706 whether a valid domain name may be parsed or generated from input. If so, then a registration request may be processed in step 710, otherwise search results from input may be retrieved in step 764. When
5 any keywords have been detected, at least one domain name for each keyword and/or combination of at least two keywords may be generated in step 780. Results of a registration request including search results, if any, may be provided in step 784.

10 Fig. 7e is a flowchart illustrating a methodology for providing metalinks with the results of a registration request (e.g., WHOIS request). When it is determined in step 714 that a domain name is not available, a record from the WHOIS database may be displayed including metalinks for accessing <META> tag information from the URI of a domain name to access content from
15 corresponding web site, a hyperlink for dialing or faxing a telephone number, a hyperlink for accessing a map or guide to locate a postal address and/or surrounding local services, and a hyperlink for accessing the after market status of the domain name which may include a sale price by the registrant or from an auction and/or listing service.

20 Fig. 7f depicts the results of a WHOIS request for a domain name. The input request used may be the domain name "example.com". Fig. 7g illustrates a methodology for extending functionality of WHOIS results by modifying the page source of a typical WHOIS request. For instance, the domain name
25 "example.com" may be converted into a hyperlink reference and/or metalink 792 so that a user may readily visit the homepage and/or sitemap of "example.com". Also illustrated are hyperlinks 794 for accessing geographic information (e.g. maps) that corresponds to the domain name, and hyperlinks for dialing the telephone 796 so that the source or registrant of the domain name may be
30 readily contacted if so desired. In addition, a hyperlink reference may be added to indicate that the domain name is available for sale 798 enabling access to an

auction site, listing service, domain name broker, or the like. The domain name status database 198 is consulted in response to the WHOIS request and zero or more hyperlinks of after market information may be generated and integrated into the page source from the results of the WHOIS request.

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Referring now to Fig. 8, steps are illustrated which show how a resolution request or search request may be modified to extend functionality. A device such as a network access apparatus 110, command line, servlet, applet, script, stand alone executable program having an input object such as a text, or web browser 112 receives 710 input having a domain name. When input is received in step 710, it may be determined in step 810 whether the input is a valid URI. When the input is a valid URI, then a second URI may be generated in step 815 from the domain name of the valid URI for accessing a WHOIS record corresponding to the domain name. However when the input is not a valid URI, then a URI may be generated in step 820 from the input and then a second URI may be generated in step 815 from the domain name of the generated URI to access a WHOIS record corresponding to the domain name. In either case, a web page with two frames may be generated and displayed in step 825 having both the content of the generated or valid URI (810, 820) and the second URI 815.

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Turning now to Fig. 9a, illustrations of web pages are displayed which correspond to steps shown in Fig. 8. A client 110 web browser 112 having a web page 910 may be used to connect to a server 120 via the Internet 130 that runs a CGI script 914. The location field of the web browser 112 is suppressed and the web page 910 displays at least two frames. The first frame is the web based location field 918 and the second frame 922 may be used to display the contents 150 of a web address. An input device (e.g. keyboard, mouse, pen light, touch screen, or microphone etc.) of a client computer or network access apparatus 110 is used to receive a web address as input either directly from a hyperlink (not shown) in the web page 910, or from the location field 918 of the

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with the notion that an "object", for purposes of computer modeling, comprises a plurality of data items or properties, has a behavior, responds to messages from other objects, and issues messages to other objects. It will be understood that the invention could be made and used with any object-oriented development environment, such as C++, Java, or other object-oriented programming environment.

Various terms have emerged in the art to capture various aspects of "object-oriented" approaches. These terms include the words encapsulation, classes, inheritance, message-passing, and polymorphism. The term "classes" relates to objects of similar types. Objects of the same class are grouped together and have certain properties, attributes, or behaviors in common. Classes may be organized into hierarchies of subclasses in which the procedures and attributes of the class are inherited by its subclasses. Thus, a "subclass" is a group of objects that have some properties, attributes, behaviors, or procedures with other groups of objects, but could have other properties, attributes, behaviors, or procedures that are different. The term "attribute" or "property" relates to data items or information or behavior that relates to a particular object. The term "inheritance" means the sharing of properties, and in some cases, attributes and behaviors, that characterizes a subclass by its parent class. The notion of inheritance purportedly allows for easier maintenance and extension of computer programs since creation of subclasses purportedly allows the program code used to create the parent class to be readily modified and reused for subclasses. An object's "procedures" or "methods" are operations upon data items, attributes, and/or properties so as to cause a computing result and provide a response. Certain aspects of object-oriented programming techniques are utilized in the present invention so as to provide extended functionality to the user interface as applied to network systems.

There is a specific model called document object model (DOM) that defines a set of classes used for the manipulation of document objects. JavaScript is a

scripting language that relies on DOM when making function calls for Internet related applications. Most of these objects are directly related to characteristics of the Web page or browser. There is a class of objects specifically applied to the manipulation of URLs, which for the purposes of discussion is called a URI object.

In an aspect of the present invention a new object is instantiated called a MetaURI Object, which inherits the properties and is a subclass of the URI object. In addition, other objects (e.g. WHOIS Object, HLD Object, etc.) are instantiated, which are subclasses of the MetaURI object. It is desirable for a user to obtain meta-information at any given time during a user's navigation experience (e.g. on the Internet, Intranet or a web cache or file system offline, etc.). As each URI is accessed the properties of the MetaURI object are updated including any other related objects such as the WHOIS object to reflect values associated with the current URI. In turn, any associated document objects are automatically updated as well. There are many applications for the WHOIS object. For instance, the WHOIS object may be integrated into bookmarks (including favorites folder), URL history folder, or even as part of the location field. In addition, by using any menu such as a right-click menu or an action menu, an extra option is listed to retrieve WHOIS information based on the URI properties of the selected object. A modified WHOIS function is programmed to extract a domain name from the URI property to be passed as a parameter for retrieving contact information from the proper WHOIS database.

Bookmarks in Netscape are stored in an HTML file having an anchor reference tag for maintaining the properties of a given bookmark when used in conjunction with a bookmark viewer. The following is an example of one such reference.

```
<A HREF="http://164.195.100.11/netahtml/search-adv.htm"
ADD_DATE="952124784" LAST_VISIT="25920000"
LAST_MODIFIED="25920000">USPTO</A>
```

In another aspect of the present invention modifications may be made to the bookmark viewer so that an extra WHOIS field may be added to the anchor reference when a page is bookmarked.

```
<A HREF="http://164.195.100.11/netahtml/search-adv.htm"
```

5 ADD_DATE="952124784" LAST_VISIT="25920000"
 LAST_MODIFIED="25920000" WHOIS="http://www.networksolutions.com/cgi-
 bin/whois/whois?uspto.gov">USPTO

10 The history folder 194 or domain name status database 198 may be modified in a similar manner except that due to its size such data is saved in a compressed format. For instance, by enabling the history folder 194 to correspond metalinks in real-time while surfing the network, a WHOIS cache 188 may be generated as each URI is being requested. This information may be used for reviewing registrant information while offline from the network, for example.

15 Domain names that are soon to be available may be distributed in advance to a user so that domain names of interest may be selected and reserved in a preordering queue on either the client or server side. Registration information is completed and a registration form is submitted to or by a registrar when the soon
20 to be available domain name that is selected does become available.

Fig. 9b is a flowchart illustrating a methodology for notifying a client that a domain name is available or may soon be available for registration. A WHOIS record may be retrieved by initiating a WHOIS request or retrieved in response to
25 processing a resolution request, search request, and registration request. Whatever the case, whenever a WHOIS record is retrieved (step 950), the expiration date for the domain name of the WHOIS record is parsed and compared in step 954 to the current date. When the difference between the expiration date and current date is determined in step 958 to be less than a
30 predetermined threshold value (e.g., 30 days), a client may be notified in step 962 that the domain name may soon be available. Upon notification, the client

Though the above aspects demonstrate how URIs may be resolved based upon a web-based version of a location field, similar teachings may be applied to those skilled in the art by providing a user interface element such as a text box object as input. The text box object may be located anywhere and on any web page including a text box that may be embedded or displayed as part of an on-line advertisement. The text box object may be used in a stand-alone application (e.g., instant messaging, custom toolbar, etc.) or stored on magnetic and/or optical media that may be non-volatile, writable, removable, or portable. The text box object may be incorporated as an applet or servlet and embedded in other applications. The text box may be integrated in the task bar or any part of the GUI's OS, or the OS bypassed and a user interface element overlaid as a graphic on a display device based on modifications to a video card and/or its associated firmware or software drivers. A command line text box may be further overlaid as an interactive object in other embodiments such as Internet television, cable television, digital television, or interactive television through an Internet appliance or set top box.

Those skilled in the art may make and use software program that functions as a browser plug-in. Such a program may be downloaded and installed for integration into the command line of a device or location field 154 of a browser program 112. Modifying the source code of the browser program 112 itself, if need be, may be more desirable, in effect, enabling tens of millions of users to

I claim:

1. A method for processing a search request comprising the steps of:

5 determining that the search request includes an identifier having a valid domain name;

 determining whether the valid domain name is available for registration;

 providing a registration form when the domain name is determined available for registration; and,

10 providing registrant information when the domain name is determined not available for registration.

2. A method for processing a search request comprising the steps of:

 determining that the search request includes at least one keyword;

15 generating at least one domain name from the at least one keyword;

 generating at least one URI for each domain name generated;

 processing the search request; and,

 determining whether to provide any generated URIs while providing any search results from the processed search request.

20

3. A method for processing a search request comprising the steps of:

 determining that the search request includes an identifier having a valid domain name;

 generating at least one URI from the valid domain name;

25 processing the search request; and,

 determining whether to provide any generated URIs while providing any search results from the processed search request.

4. A method, as set forth in claim 3, further including the step of inputting the

30 search request from a user interface element.

5. A method, as set forth in claim 4, wherein said step of inputting the search request from a user interface element further includes the step of inputting the search request into one of a browser location field, search box, microphone, and command line.

5

6. A method, as set forth in claim 4, wherein the URI accesses meta information.

7. A method, as set forth in claim 6, wherein the meta information includes one of a homepage, sitemap, WHOIS record, <META> tag, URI HEAD, map, page source, and domain name after market information.

10

007290-1E1B560

ABSTRACT OF THE DISCLOSURE

An input request may be processed by a device such as a network access apparatus, servlet, applet, stand-alone executable program, or a user interface element such as a microphone, text box object or location field of a web browser. When such an input request is determined to include a valid domain name, it may then be determined whether to perform a search request with the input as a literal string. A search request may be initiated by selecting an exact phrase option from a listbox or by surrounding the input with a delimiter such as the quote sign (e.g., "example.com") to process the detected domain name as a literal string, otherwise a domain name detected from input may be processed as a registration and/or resolution request. When it is determined that the input is instead processed as a resolution and/or registration request, then the resolvability and/or availability of the domain name may be determined. When the domain name is determined to be not resolvable, then the domain name may be processed as a registration request.

NOT 230" 4E T35560

AltaVista - Web Results - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print To All Home ResGuide

Address: <http://www.altavista.com/cgi-bin/query?pg=q&sc=on&hl=on&act=2006&par=0&q=zipnames.com&lx=XX&type=text>

alta vista: SEARCH Search Live! Shopping Ragging Bull Free Internet Access Email

Find: zipnames.com Language: any language Advanced Web Search

Help Family Filter Settings Language Settings

\$100 In Calling Card Calls!

Click the products tab to earn shopping rewards.

Click here to find out more!

What is a tab?

Shop Here! amazon.com Search ZIPNAMES! Books Music Movies Toys Electronics

altavista SHOPPING Computer Hardware Gifts & Flowers Furniture

AUCTIONS amazon.com Find Great Items at Amazon Auction BIDDING!

Products News Discussions The Web MP3/Audio Images Video Directories

Web Pages: altavista found no document matching your query.

Have you tried these resources?

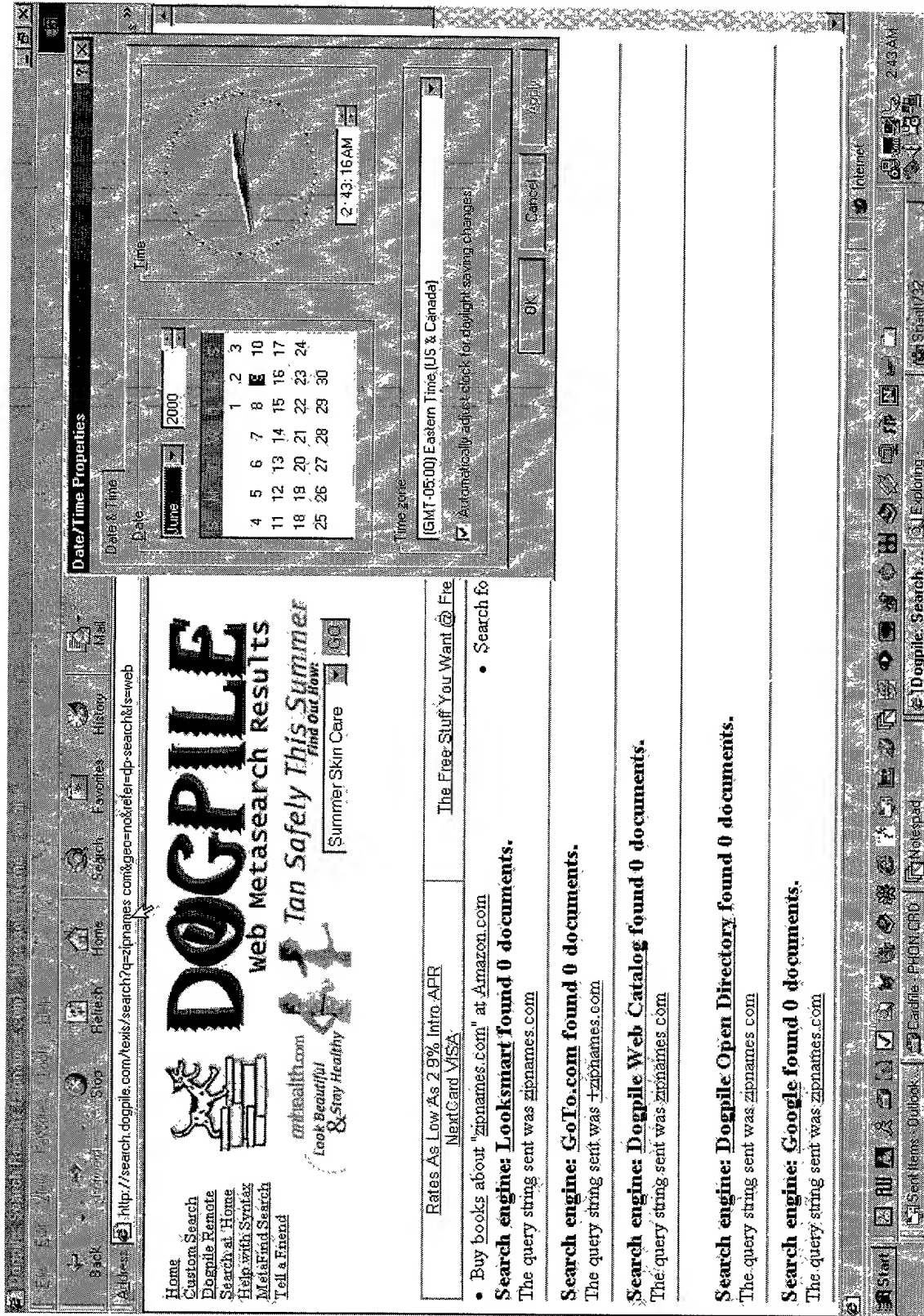
- Comparison shop for zipnames.com
- Connect now with an expert on zipnames.com at EXP.com
- Shop by request for zipnames.com at Respond.com
- Find **Yellow Page** information on zipnames.com at WorldPages.com
- Search — Know more! Get to know zipnames.com at Britannica.com
- Refine your search on zipnames.com with LookSmart Categories

Products News Discussions The Web MP3/Audio Images Video Directories

Start Sent Items Outlook Cardfile PHON Notespad AltaVista Web Mail Web Professionals

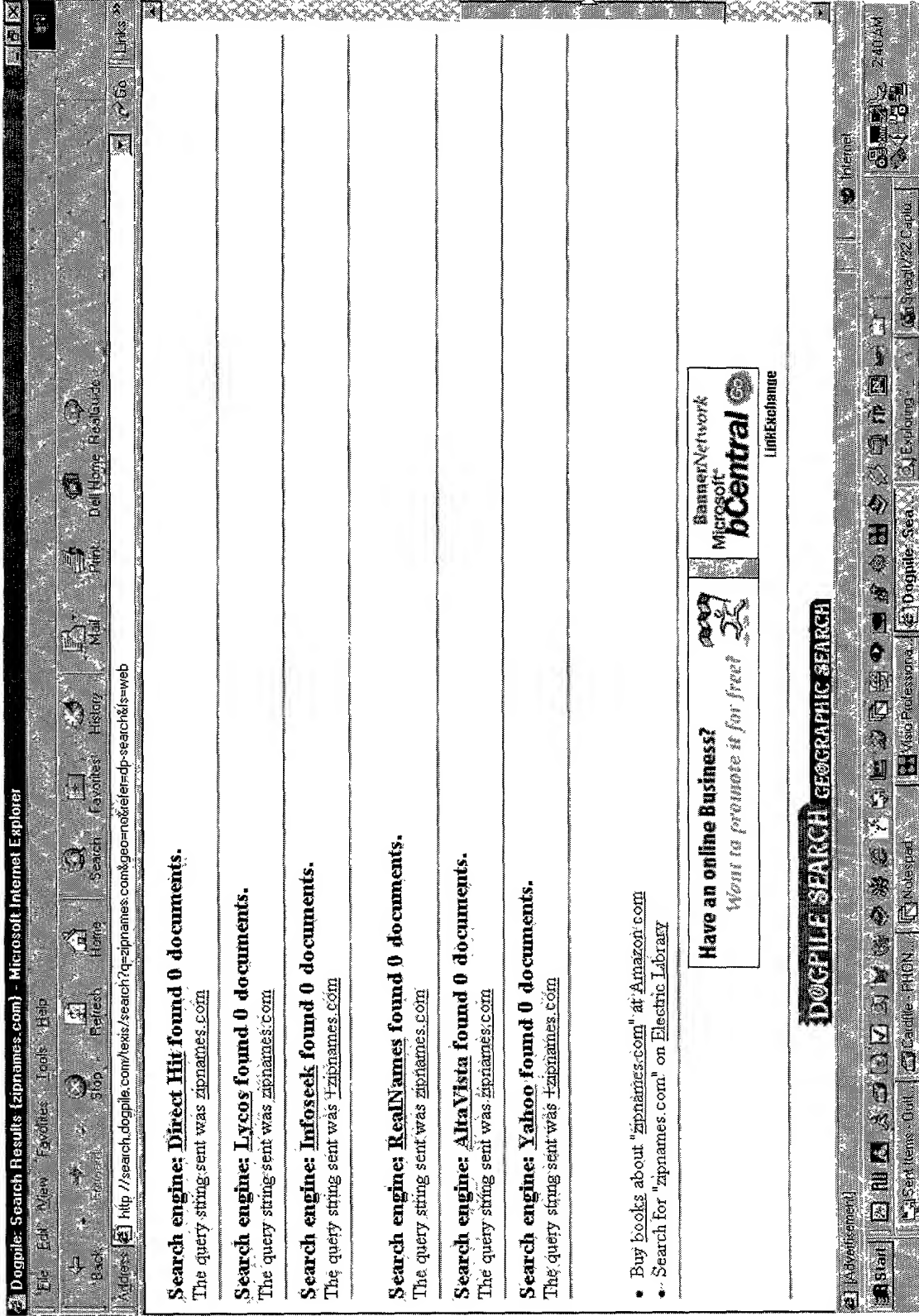
Internet 2:52 AM

Prior Art
Fig. 1a



Prior Art

Fig. 1b



Prior Art
Fig. 1c

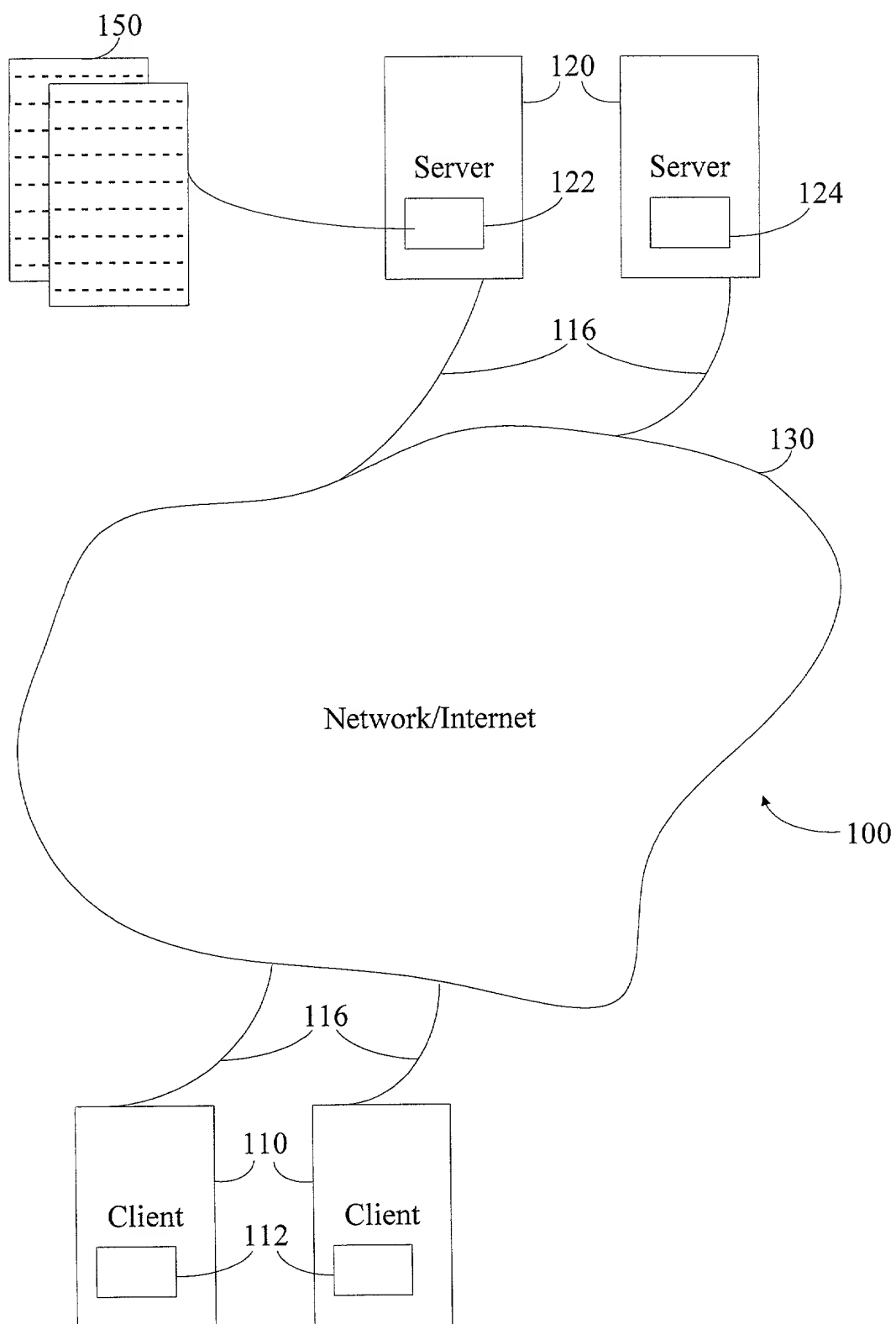


Fig. 1d

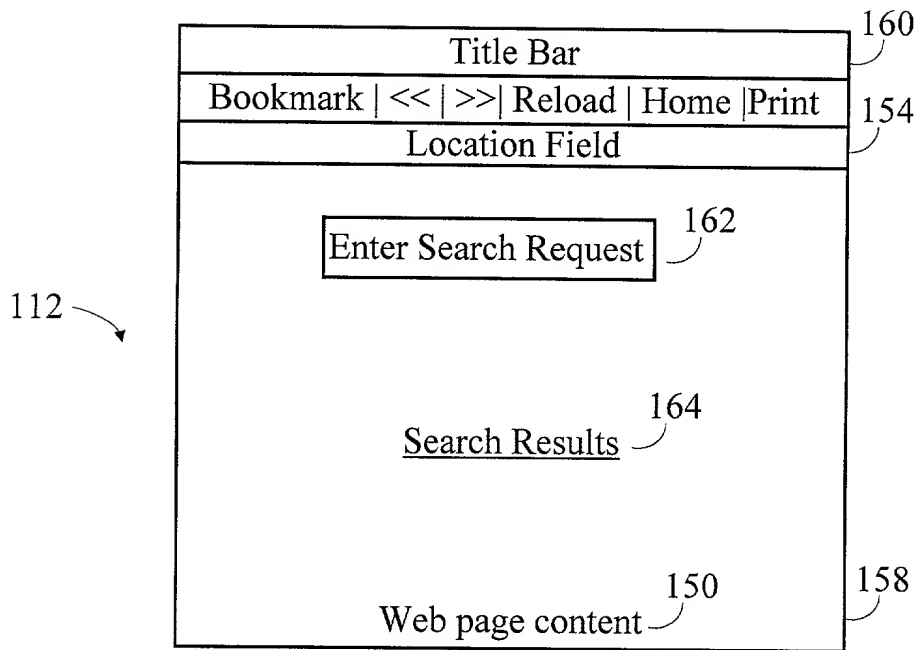


Fig. 1e

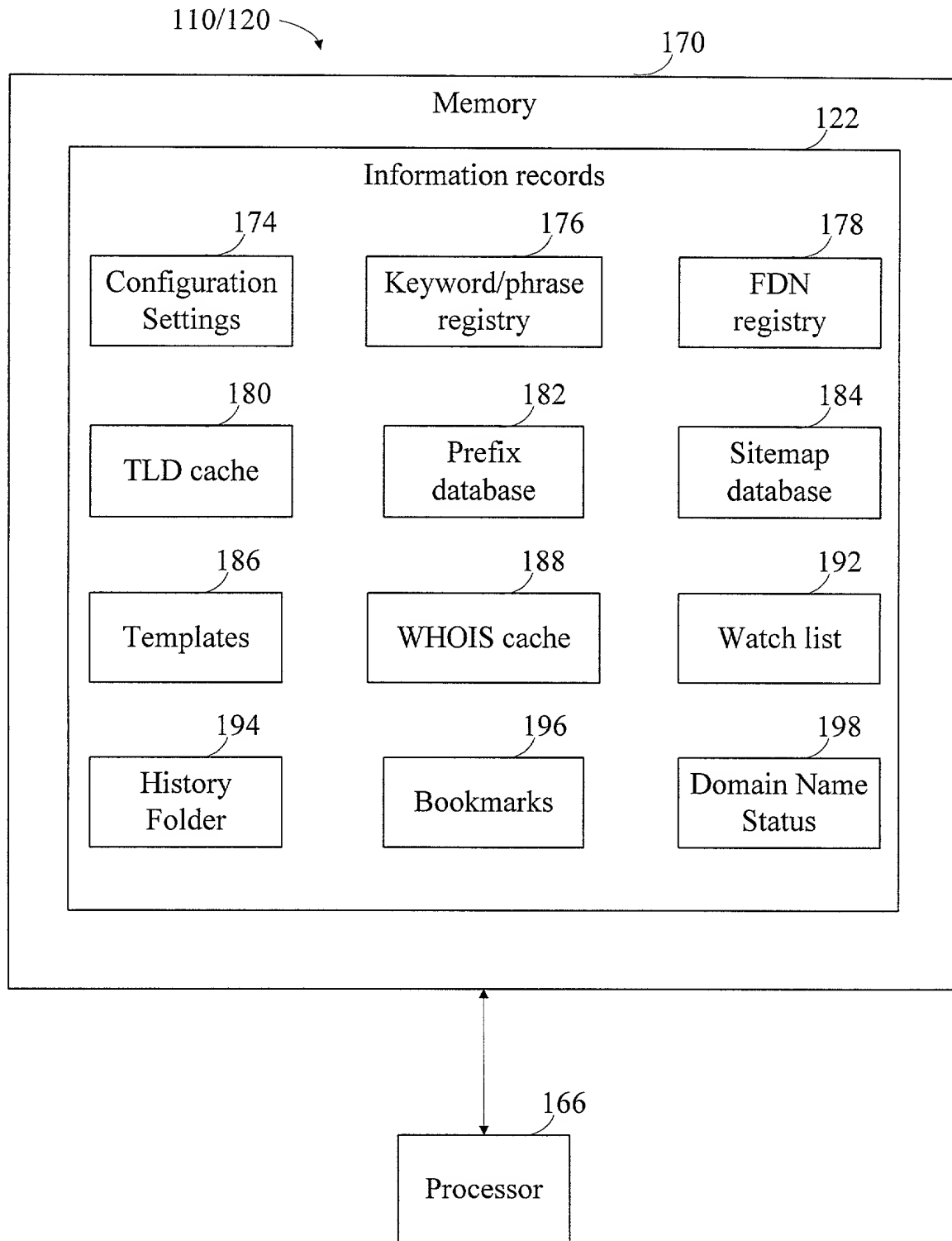
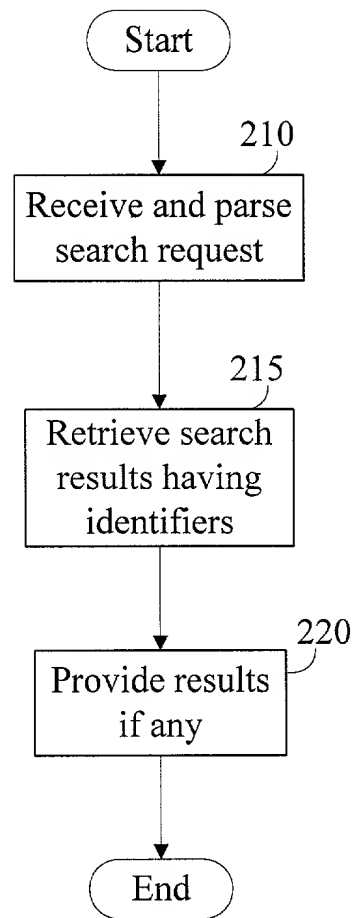
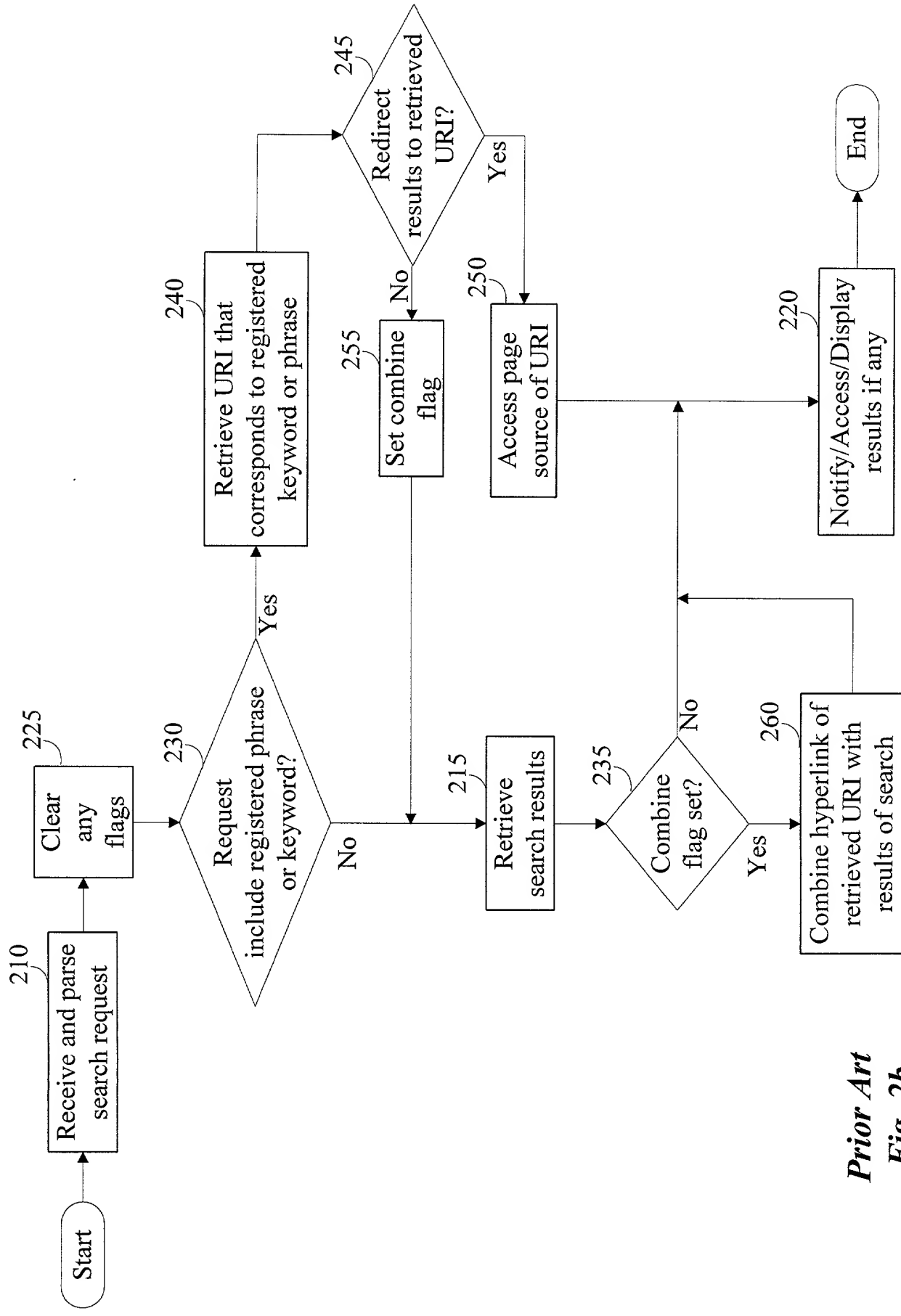


Fig. 1f



Prior Art
Fig. 2a



Prior Art
Fig. 2b

```
graph TD
    Start([From 225  
Clear  
combine  
flag]) --> D265{Input  
have no \".\"  
delimiter or \" \"  
delimiter  
only? 265}
    D265 -- Yes --> End([To 230  
Request include  
registered phrase  
or keyword?])
    D265 -- No --> D270{Input  
have no \" \"  
delimiter or \".\"  
delimiter  
only? 270}
    D270 -- Yes --> A((A))
    D270 -- No --> D275{Input  
have more than  
one identifier? 275}
    D275 -- Yes --> P280[Generate and display a  
window or frame for  
each identifier 280]
    D275 -- No --> End
```

Fig. 2c

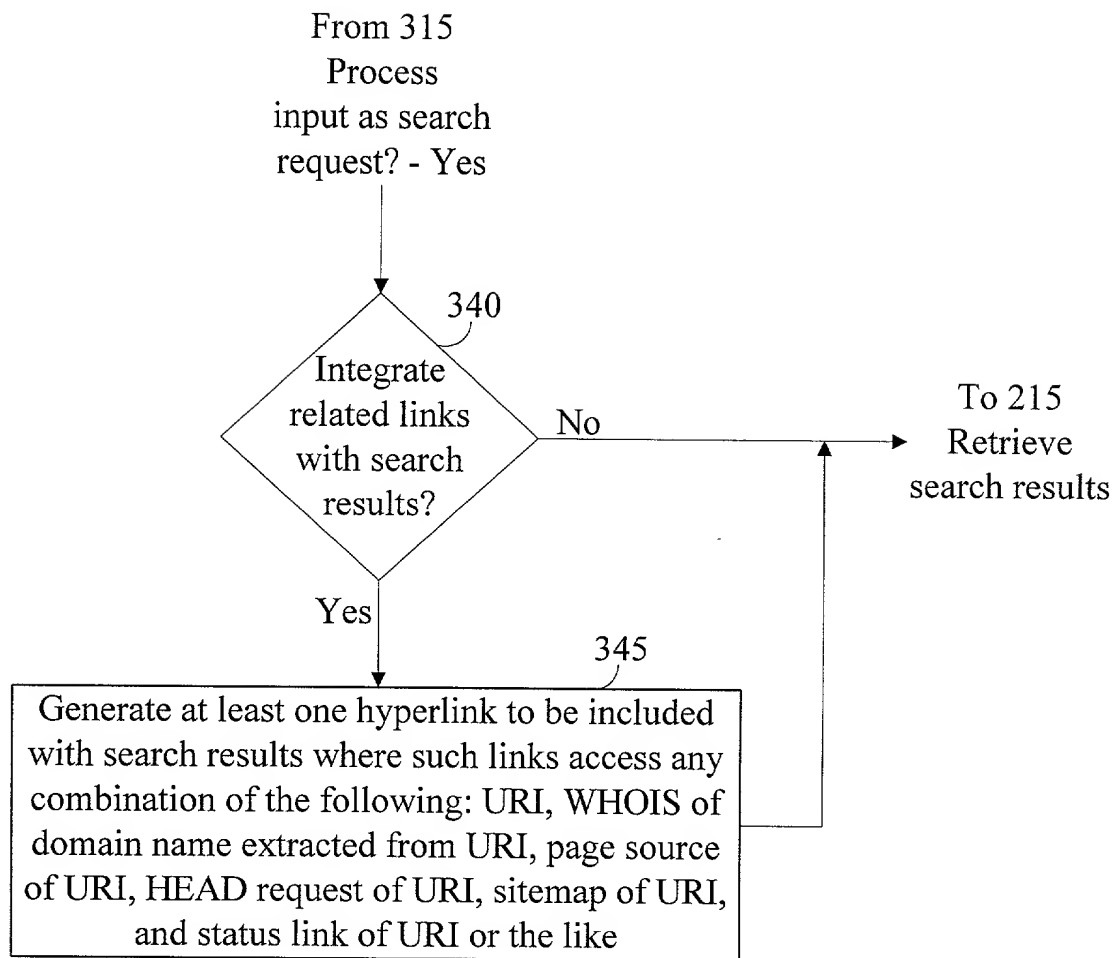


Fig. 3b

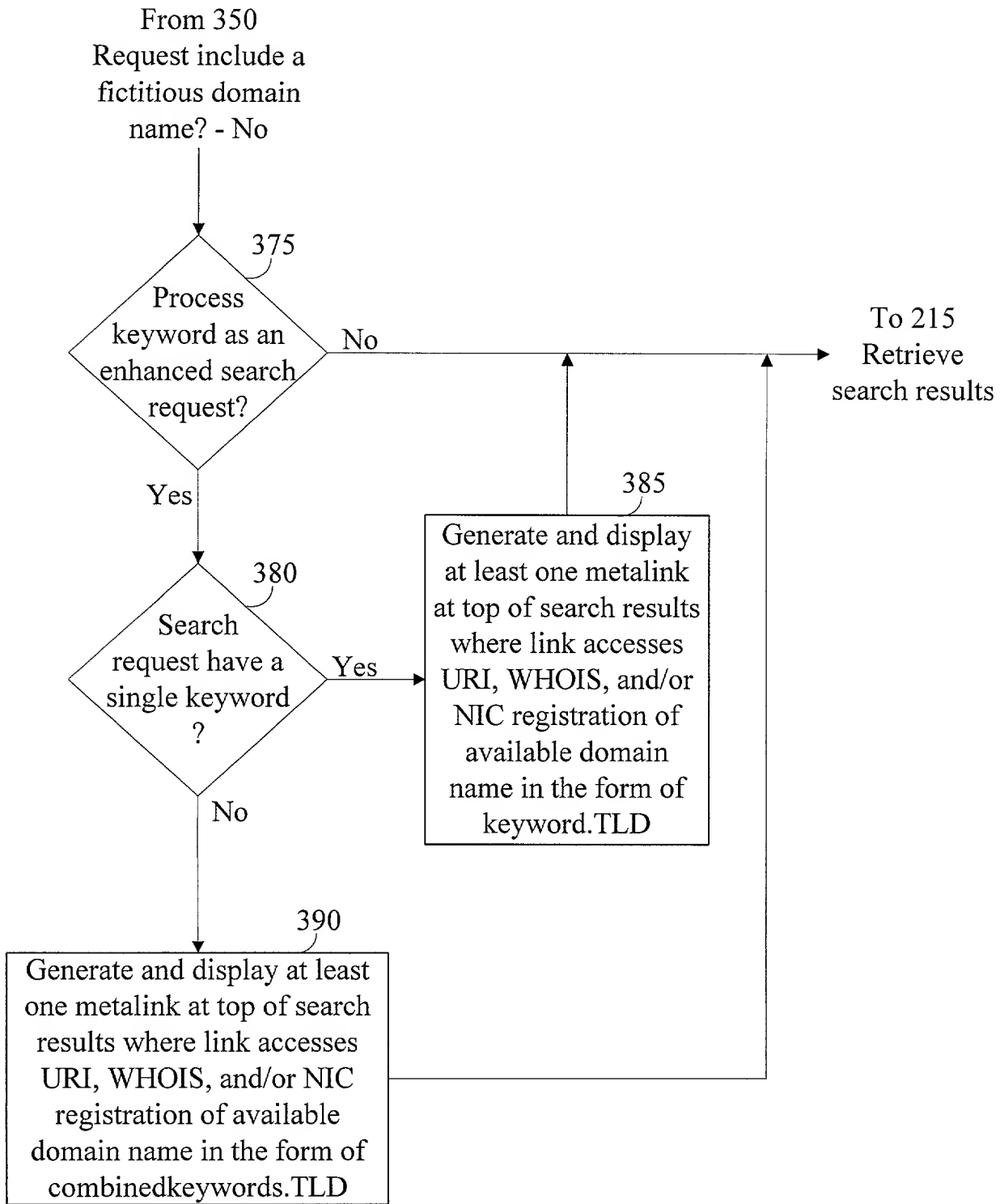
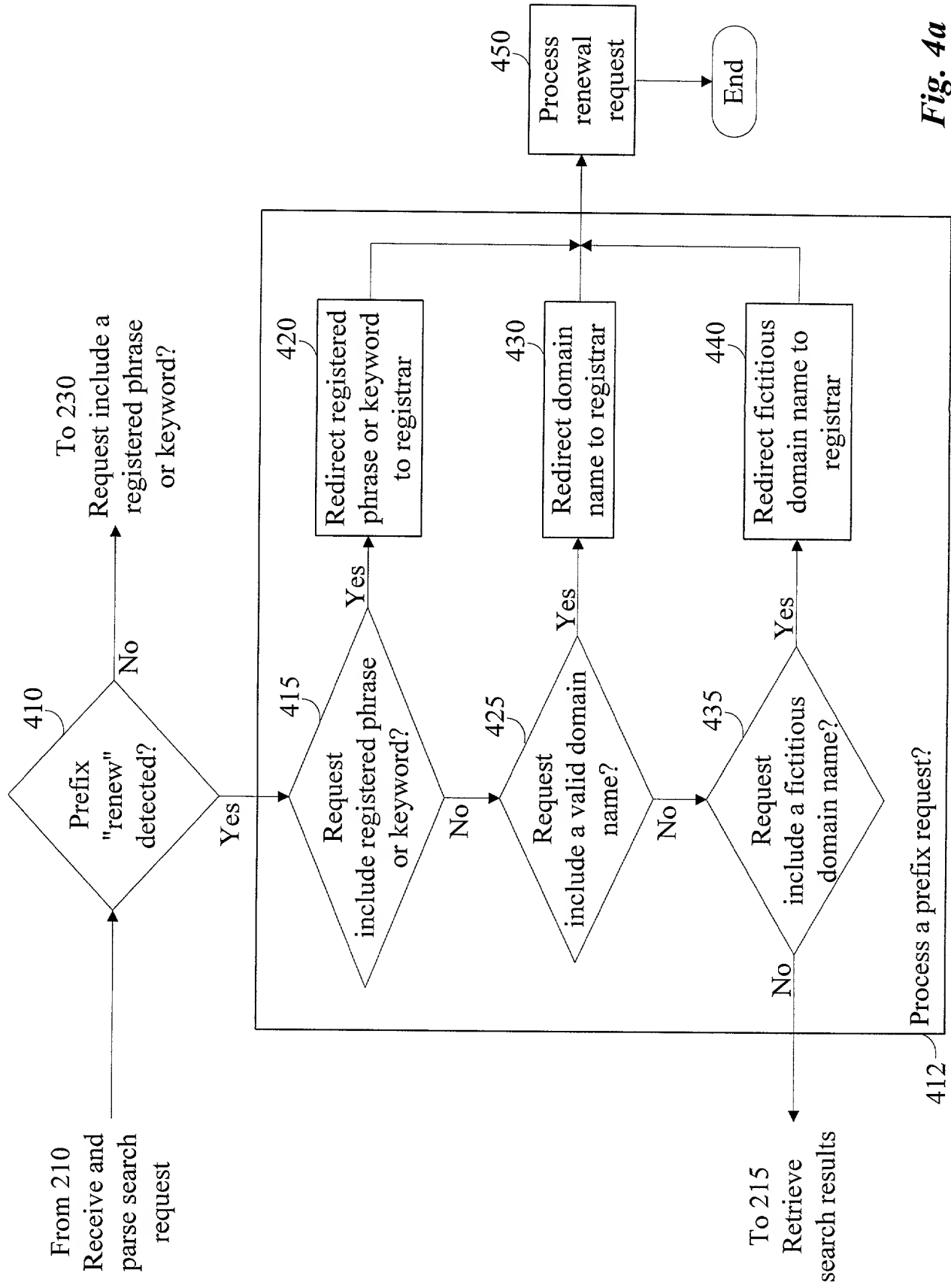


Fig. 3d



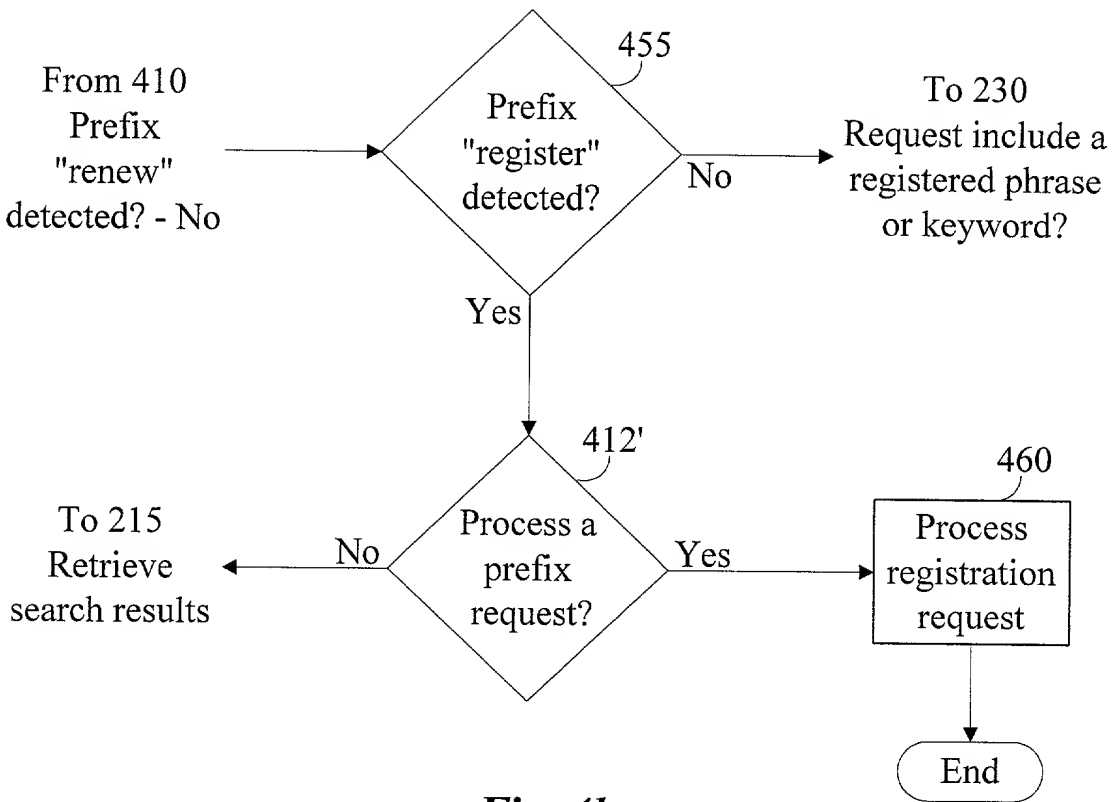


Fig. 4b

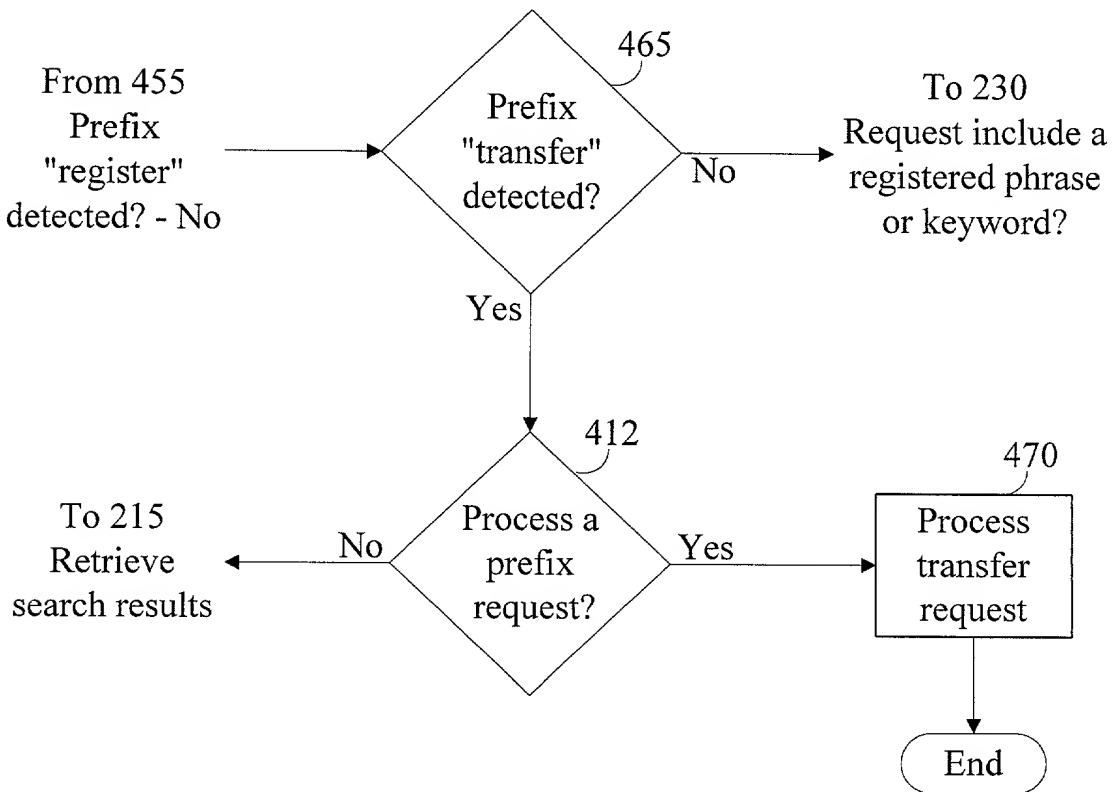


Fig. 4c

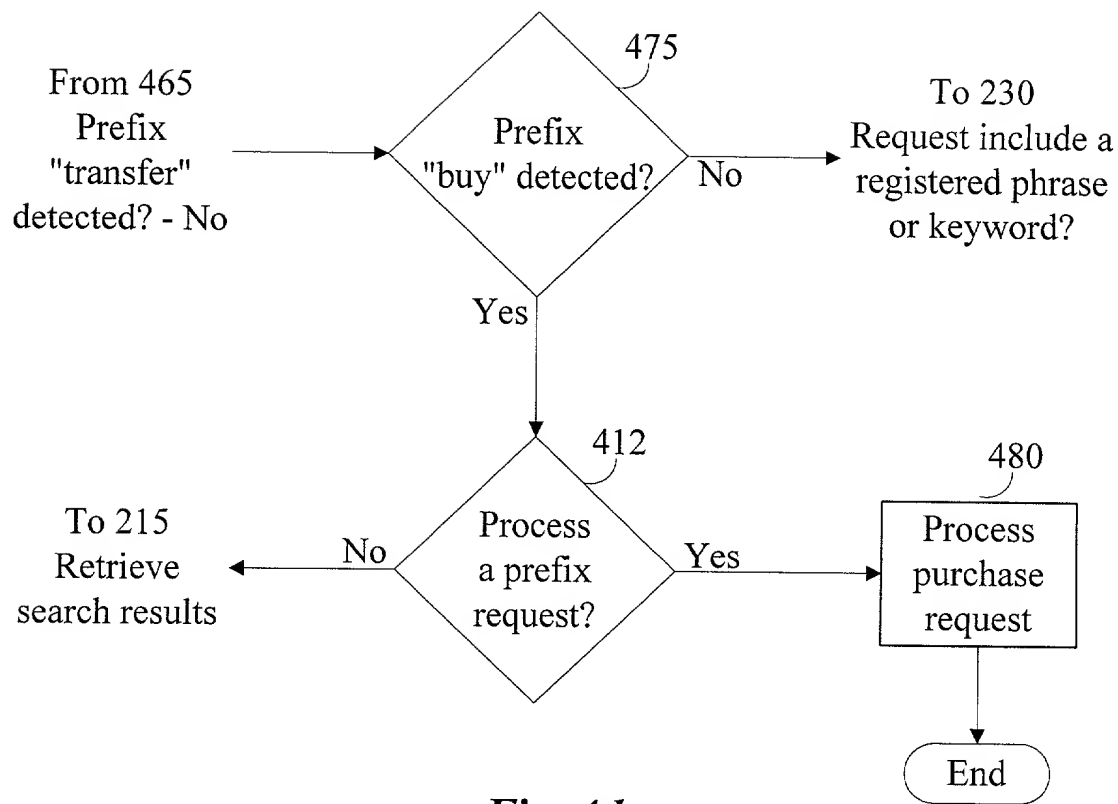


Fig. 4d

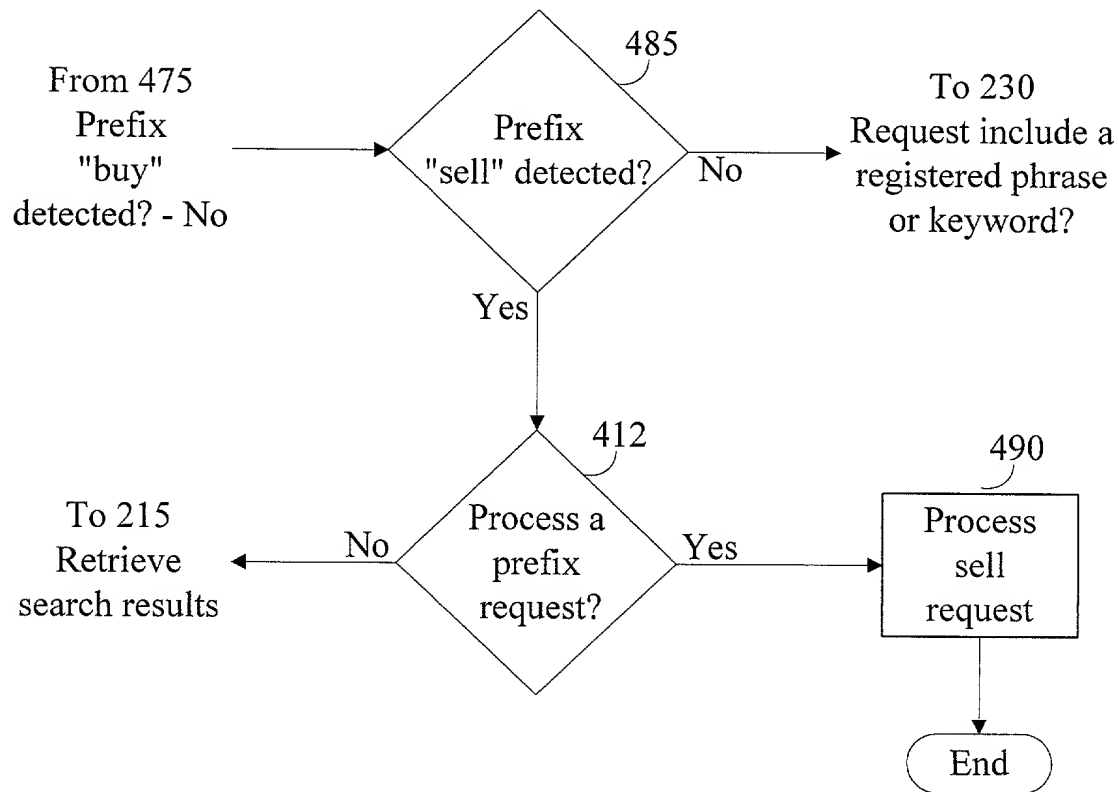


Fig. 4e

174 Configuration Settings

General Features

☒ Select Registrar

☒ Select Search Engine

☒ Enable Prefix

☒ Enable Metalinks

☒ Enable Watch List

Enhanced (Auto)search features

☒ Generate DNs from keywords

☒ Register Input when available

Enhanced registration features

☒ Also provide search results

☒ Also provide resource location

Fig. 5a

150

154/162

best price

Search

Resolve

Multi

550

554

Register

Edit

Handle

List

Status

History

Watch

Renew

Transfer

Escrow

Consolidate

Auction

Bid

Value

Buy

Sell

Lease

Generate

WHOIS

Expire

Registrar

Tools

Redirect

Lock

Email

WebHost

Incorporate

Trademark

Geo

Dial

best.com

price.com

bestprice.com

pricebest.com

bestpricenow.com

nowpricebest.com

560

Best Price Web Site - Result #1

564

Click here for more results on "best price"

Provide keywords and combine generated available DNS and/or Metalinks with search results and/or resolution request.

568

BestPrice.com is for sale - Make Offer NOW!

Provide DN and combine search results with a registration and/or resolution request.

Fig. 5b

Results for "software patent"

1 - 4 next >>

1. SoftwarePatent.com : Software Patent Resources.
SoftwarePatent.com provides resources and links for: patent searching, laws, case, intellectual property organizations. All links are software, internet and computer patent related
99% 9/16/99 <http://www.softwarepatent.com/>
2. Software Patent Resource has moved to <http://www.softwarepatent.com>
Software Patent Resource has moved to <http://www.softwarepatent.com>
98% 9/15/99 <http://www.longest.com/spn/spn.shtml>
3. Patent Explorer / Software Subset
Rapid Patent, in association with Electronic Data Systems (EDS), has developed a single CD-ROM which holds all previously inaccessible software patent data. There are over 7,000 software patents covering 20 years from 1972. Full text searchable
98% 9/4/99 <http://law.cd-rom-directory.com/cdprod1/cdhref/002/509.shtml>
4. Recent Software Patent Developments In The United States
Recent Software Patent Developments In The United States John V. Swinson* Abstract This article examines recent U.S. developments in patent law concerning computer software. The cases discussed are appellate decisions of the Court of Appeals.
98% 9/24/99 <http://www.comlaw.utas.edu.au/law/jlis/patents.html>

Prior Art
Fig. 6a

Results for "software patent"

1 - 4 next >>

1. [SoftwarePatent.com](http://www.softwarepatent.com) : [Software Patent Resources](http://www.softwarepatent.com).

[WHOIS](http://www.softwarepatent.com)

[SoftwarePatent.com](http://www.softwarepatent.com) provides resources and links for: patent searching, laws, case, intellectual property organizations. All links are software, internet and computer patent related 99% 9/16/99 <http://www.softwarepatent.com/>

2. [Software Patent Resource](http://www.softwarepatent.com) has moved to <http://www.softwarepatent.com>

[WHOIS](http://www.softwarepatent.com) [Homepage](http://www.softwarepatent.com)

[Software Patent Resource](http://www.softwarepatent.com) has moved to <http://www.softwarepatent.com> 98% 9/15/99 <http://www.longest.com/spn/spn.shtml>

3. [Patent Explorer / Software Subset](http://www.cdrom-directory.com/cdprod1/cdhrec/002/509.shtml)

[WHOIS](http://www.cdrom-directory.com/cdprod1/cdhrec/002/509.shtml) [Homepage](http://www.cdrom-directory.com/cdprod1/cdhrec/002/509.shtml) [Page Source](http://www.cdrom-directory.com/cdprod1/cdhrec/002/509.shtml)

[Rapid Patent](http://www.cdrom-directory.com/cdprod1/cdhrec/002/509.shtml), in association with Electronic Data Systems (EDS), has developed a single CD-ROM which holds all previously inaccessible software patent data. There are over 7,000 software patents covering 20 years from 1972. Full text searchable 98% 9/4/99 <http://law.cdrom-directory.com/cdprod1/cdhrec/002/509.shtml>

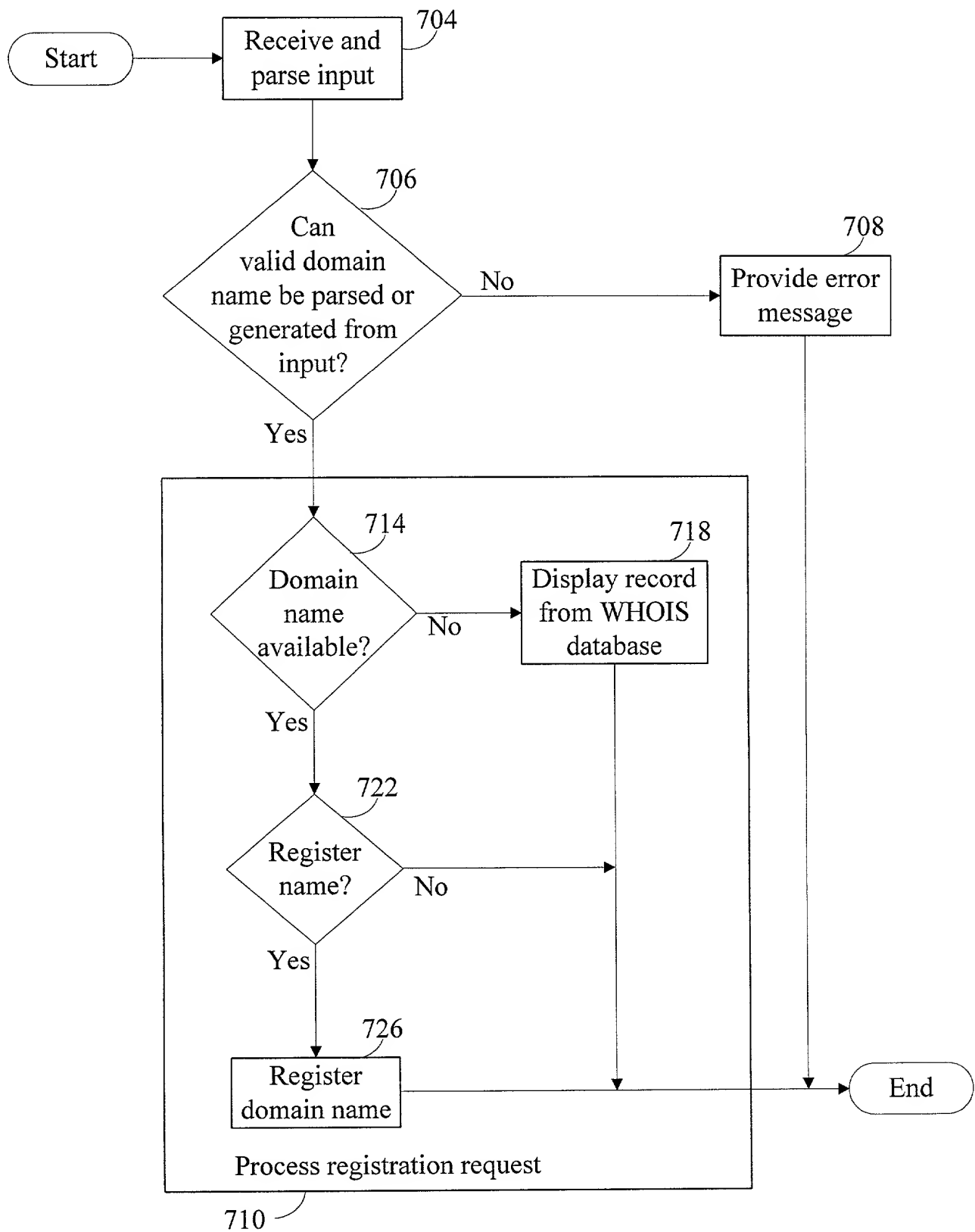
4. [Recent Software Patent Developments In The United States](http://www.comlaw.utas.edu.au/law/jlis/patents.html)

[WHOIS](http://www.comlaw.utas.edu.au/law/jlis/patents.html) [Homepage](http://www.comlaw.utas.edu.au/law/jlis/patents.html) [Page Source](http://www.comlaw.utas.edu.au/law/jlis/patents.html) [Meta](http://www.comlaw.utas.edu.au/law/jlis/patents.html) [Sitemap](http://www.comlaw.utas.edu.au/law/jlis/patents.html) [After Market Status](http://www.comlaw.utas.edu.au/law/jlis/patents.html)

[Recent Software Patent Developments In The United States](http://www.comlaw.utas.edu.au/law/jlis/patents.html) John V. Swinson* Abstract This article examines recent U.S. developments in patent law concerning computer software. The cases discussed are appellate decisions of the Court of Appeals..

98% 9/24/99 <http://www.comlaw.utas.edu.au/law/jlis/patents.html>

Fig. 6b



Prior Art
Fig. 7a

From 706
Can valid domain
name be parsed or
generated from input? - No

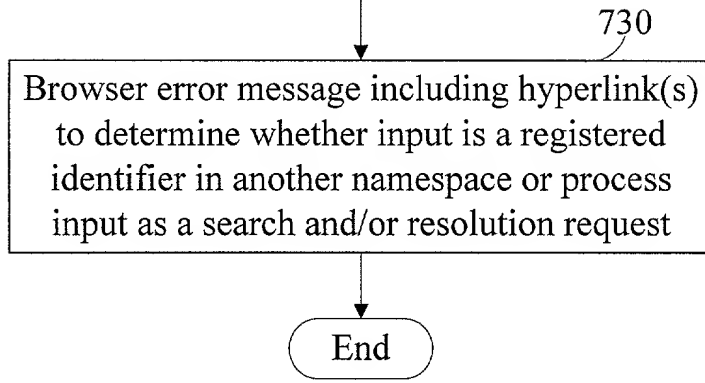


Fig. 7b

From 710
Process domain name
as registration request

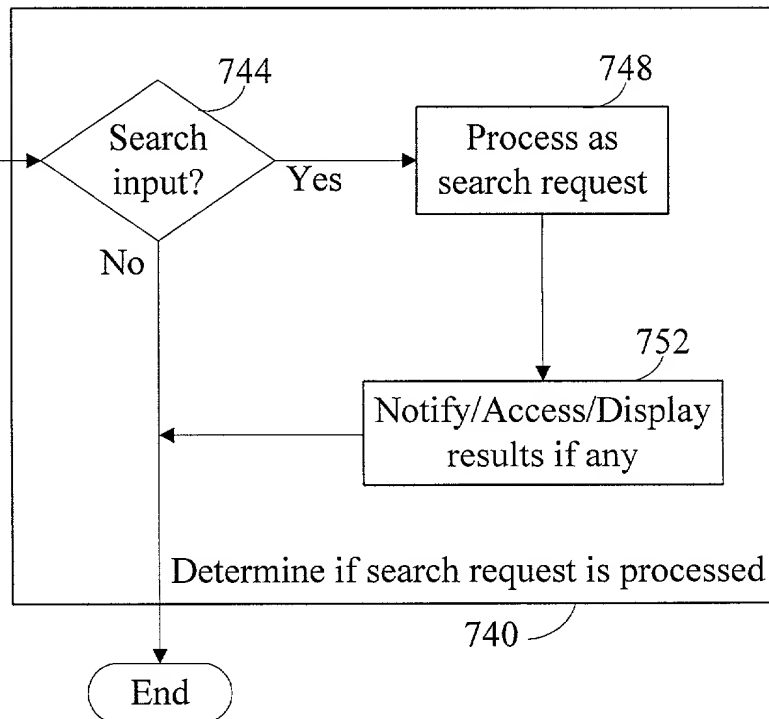


Fig. 7c

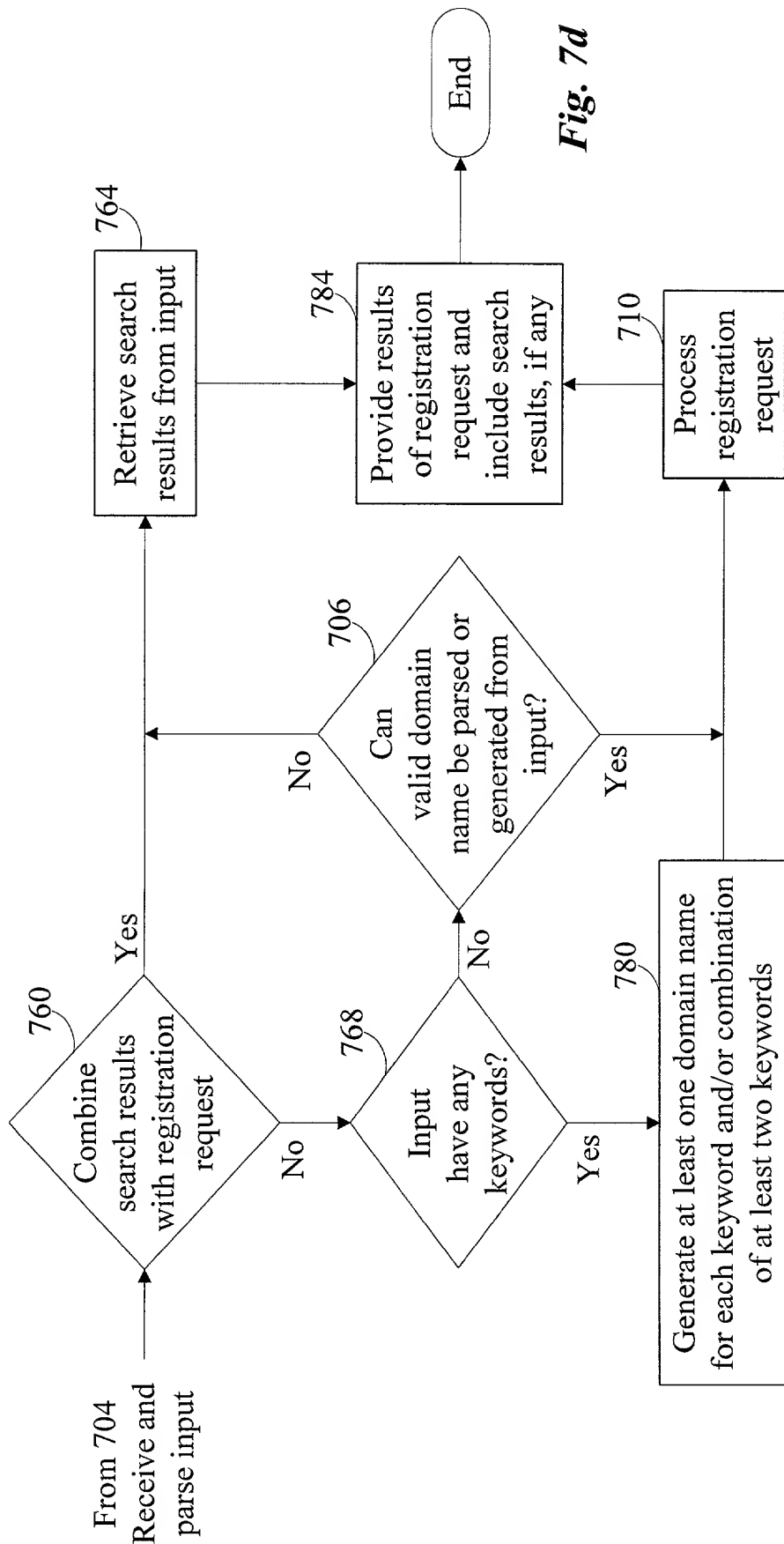


Fig. 7d

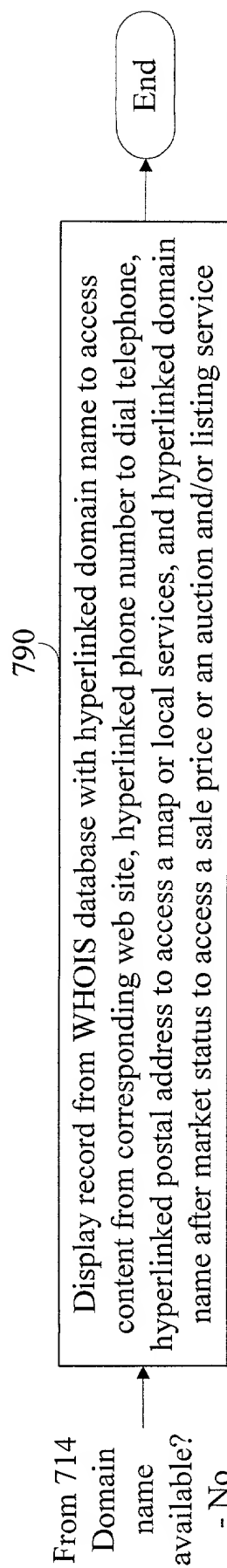


Fig. 7e

Registrant:

Internet Assigned Numbers Authority (EXAMPLE-DOM)

4676 Admiralty Way, Suite 330

Marina del Rey, CA 90292

US

Domain Name: EXAMPLE.COM

Administrative Contact, Technical Contact, Zone Contact:

Internet Assigned Numbers Authority (IANA) iana@IANA.ORG

310-823-9358

Fax- - 310-823-8649

Record last updated on 14-Jun-99.

Record expires on 15-Aug-2000.

Record created on 14-Aug-95.

Database last updated on 18-Jun-2000 16:11:15 EDT.

Domain servers in listed order:

VENERA.ISI.EDU

128.9.176.32

NS.ISI.EDU

128.9.128.127

Prior Art

Fig. 7f

```

<html><body>
<pre>
Registrant:
Internet Assigned Numbers Authority (<A href="whois?EXAMPLE-DOM">EXAMPLE-DOM</A>)
4676 Admiralty Way, Suite 330
Marina del Rey, CA <a href="/cgi-bin/map.cgi?zip=90292">90292</a>
US
Domain Name: <a href="http://www.example.com">EXAMPLE.COM</a>
Administrative Contact, Technical Contact, Zone Contact:
Internet Assigned Numbers Authority (<A href="whois?IANA">IANA</A>) iana@IANA.ORG
<a href="tel:+13108239358">310-823-9358</a>
<a href="fax:+13108238649">Fax- 310-823-8649</a>
Record last updated on 14-Jun-99.
Record created on 14-Aug-95.
Database last updated on 11-Aug-99 03:52:52 EDT.
Domain servers in listed order:
VENERA.ISI.EDU      <A href="whois?128.9.176.32">128.9.176.32</A>
NS.ISI.EDU          <A href="whois?128.9.128.127">128.9.128.127</A>
</pre>
<a href="http://www.tlda.com/cgi-bin/auction.cgi">Domain Name is available for Sale</A>
</body></html>

```

Fig. 7g

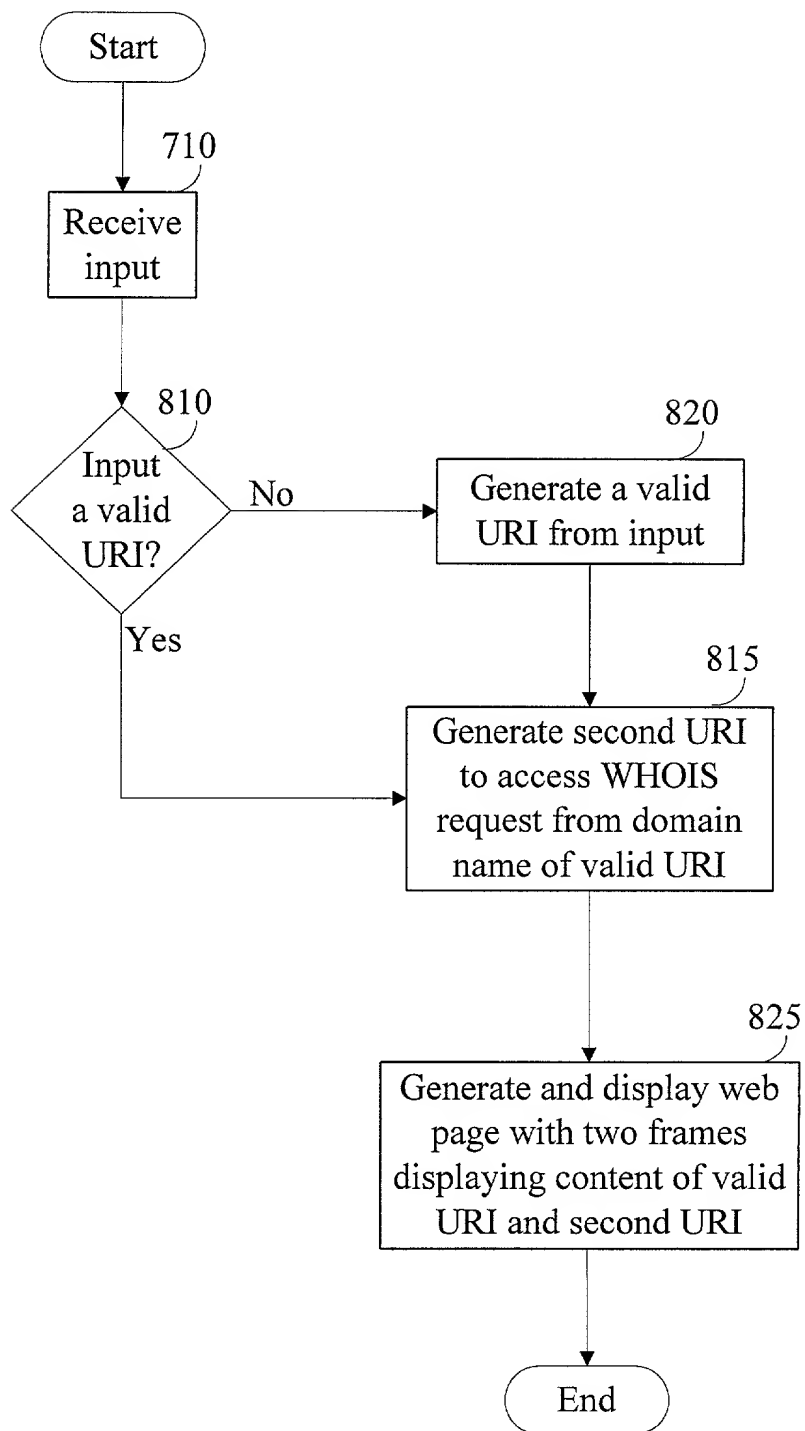


Fig. 8

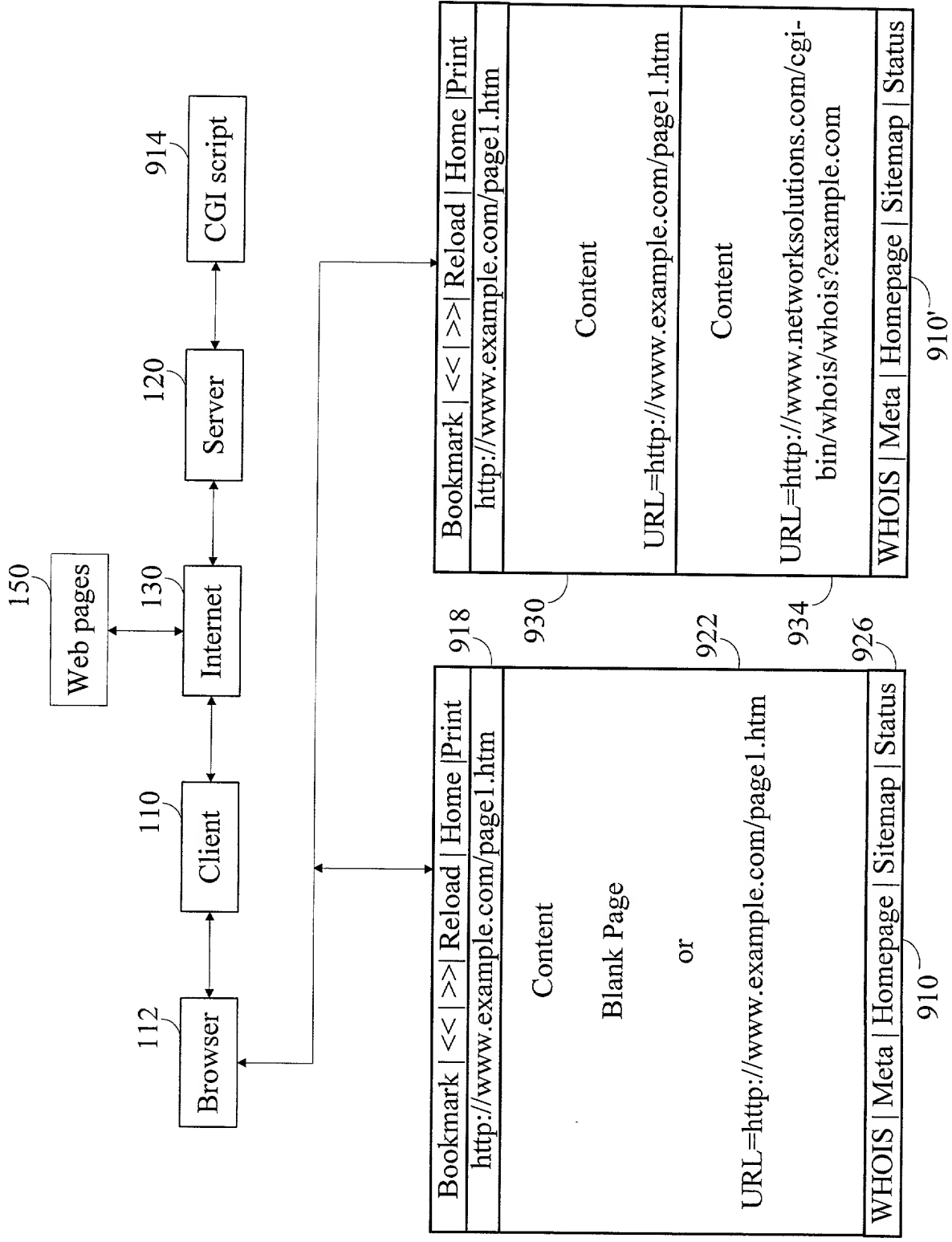


Fig. 9a

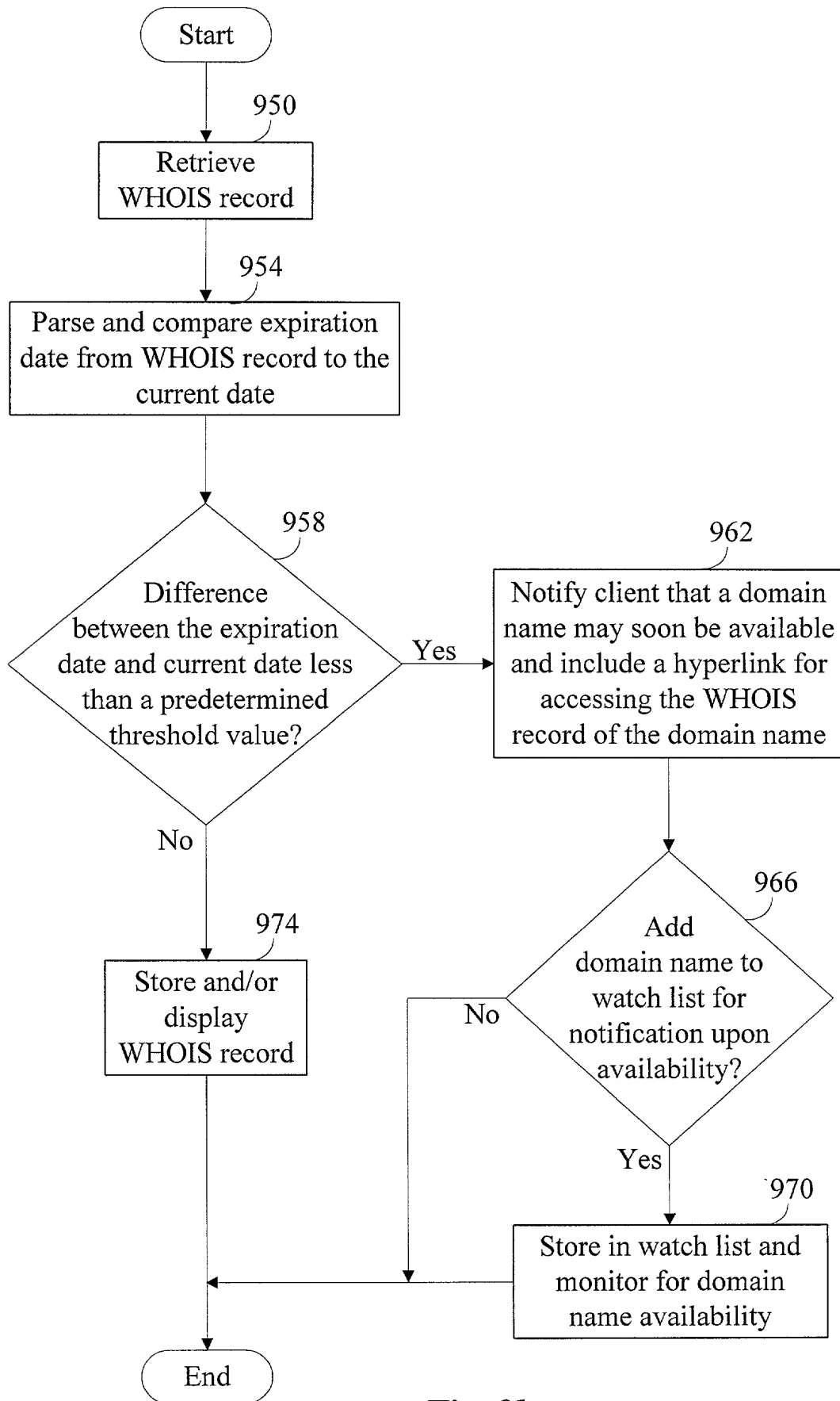



Fig. 9b

Please type a plus sign (+) inside this box → 

PTO/SB/01 (12-97)
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Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)	Attorney Docket Number	
	First Named Inventor	Schneider
	COMPLETE IF KNOWN	
	Application Number	/
	Filing Date	6/21/2000
	Group Art Unit	
<input checked="" type="checkbox"/> Declaration Submitted with Initial Filing	OR	<input type="checkbox"/> Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)
Examiner Name		

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Method and apparatus for integrating resolution services, registration services, and search services.

the specification of which (Title of the Invention)

☒ is attached hereto
OR

☐ was filed on (MM/DD/YYYY) as United States Application Number or PCT International

Application Number and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
PCT 00/10883	USA	04/20/2000	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>


☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.
60/157,075	10/01/1999	
60/160,125	10/18/1999	
09/525,350	03/15/2000	
09/532,500	03/21/2000	

[Page 1 of 2]

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Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 385(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

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Name	Registration Number	Name	Registration Number

☐ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

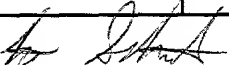
Direct all correspondence to: ☒ Customer Number or Bar Code Label  OR ☐ Correspondence address below

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:

☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any))		Family Name or Surname			
Eric		Schneider			
Inventor's Signature				Date	6/21/2000
Residence: City	University Heights	State	OH	Country	USA
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				Country	USA

☐ Additional inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto